R E.N.D.

Vol. 112. Pt. 7. Pp. 141–172. 119 figs. 16th August, 1960

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PUBLISHED BY THE SOCIETY AND
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Price 13s. 0d.

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THREE NEW OMALIINE GENERA FROM ASIA AND AUSTRALASIA PREVIOUSLY CONFUSED WITH *PHLOEONOMUS* THOMSON (COLEOPTERA : STAPHYLINIDAE)

By W. O. Steel

(*Department of Zoology and Applied Entomology, Imperial College, London, S.W.7*)

Manuscript received 1st October, 1959

(Read 2nd December, 1959)

With 119 Text-figures

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I. Introduction and Acknowledgments

In the past, the genus *Phloeonomus* Thomson has served as a receptacle for a large number of miscellaneous Omaliinae from all parts of the world and, as at present constituted, contains several distinct generic entities. *Xanthonomus*, described by Bernhauer as a subgenus, has already been shown to be a good genus (Steel, 1955, *Ent. mon. Mag.* **91** : 275–8) and the so-called subgenera *Phloeostiba* Thomson and *Xylostiba* Thomson[1] are likewise distinct, a conclusion also reached independently by Fagel (1956, *Bull. Inst. roy. Sci. nat. Belg.* **32** (48) : 2). Recently, a new genus has been erected for *Phloeonomus flavicornis* Cameron (Steel, 1959, *Ent. mon. Mag.* **95**:112–3). There still remain, however, a number of species for which new genera are necessary and some of these, from Asia and Australasia, are dealt with below. All the species concerned are revised and several new ones discovered in the course of the work are described.

My best thanks are due to Dr. G. Fagel, Institut royal des Sciences naturelles de Belgique ; Dr. E. Tortonese, Museo Civico di Storia naturale, Genoa ; Mr. H. Wenzel, Chicago Natural History Museum, and Mr. H. Womersley, South Australian Museum, for the loan of material from their respective Institutions and also to the authorities of the British Museum (Nat. Hist.) for the opportunity of studying the specimens in their care.

II. **Paraphloeostiba** gen. n.

Head narrowed immediately behind eyes to a broad neck ; ocelli distinct ; anteocellar foveae somewhat elongate ; below and behind each eye with a distinct border (orbital margin) which varies, in different species, in its distance from the eye and appears from above as a small tooth at its

[1] It may perhaps be mentioned here that *Phloeonomus* (*Xylostiba*) *antennarius* Reitter must be placed as a synonym of *Omalium allardi* Fairmaire. I am indebted to Dr. Z. Kaszab of the Budapest Natural History Museum for the opportunity of studying the type of Reitter's species. This is a male and not, as stated in the original description, a female.

posterior margin (fig. 2); gular sutures separate, closest at about level of middle of eyes, diverging in front of and behind this point; antennae variable (figs. 6–8), the sixth to eleventh segments (seventh to eleventh in *P. alutacea* (Cameron)) with close, short, fine setae in addition to the sparse, rather long setae present on all segments; labrum emarginate in front, dorsal surface with a few rather long setae, the front margin with a close fringe of short, frayed setae; mandibles short and stout, each with a fringe of frayed setae internally and a distinct, file-like molar area at base; the right with a distinct tooth internally not far from apex, the left edentate internally; maxillae and labium as figure 4.

Pronotum transverse, the side margins double as seen from the side (fig. 3); lightly or strongly impressed at sides posteriorly, sometimes also with a longitudinal impression on each side of middle; mesosternum not keeled, its process bluntly pointed and extending between the intermediate coxae for about half their length to meet the metasternal process; elytra and wings normal. *Abdomen:* tergite of fourth segment with a small, closely punctulate and pubescent area on each side of middle; posterior margin of tergite of seventh segment with a narrow membranous fringe. *Legs:* posterior coxae of the normal Omaliine form; anterior tibiae with a few, rather stout setae externally on about apical third, the intermediate finely setose externally over their whole length, the posterior finely setose externally on about apical third; tarsi, excluding claws, about half as long as their respective tibiae, the first 4 segments very short, the fifth about one and two-thirds as long as the preceding 4 together; first 4 segments of anterior tarsi each with 2 long spatulate, apically ribbed setae,[2] one at each apical angle, the first 4 segments of intermediate and posterior tarsi each with 2 long simple setae at each apical angle.

Ground sculpture of dorsal surface in the form of a fine network, the meshes of which are polygonal.

Type species: *Paraphloeostiba marianicola* sp. n.

Range: India, Ceylon, SE. Asia (including Formosa, the Philippines and the East Indies), Mariana Is., Solomon Is., New Hebrides, Norfolk Island, Australia and the Seychelles. A single specimen of a new species, too badly damaged to describe, has also been seen from Fiji.

Paraphloeostiba is not closely allied to any described genus except *Phloeostiba* Thomson, with which it agrees in the structure of the ligula and the pronotal margins. It differs, however, in the shorter third and relatively longer fourth segment of the maxillary palpi, as well as in the more compact form. The form of the ligula and maxillary palpi distinguish it from *Phloeonomus*.

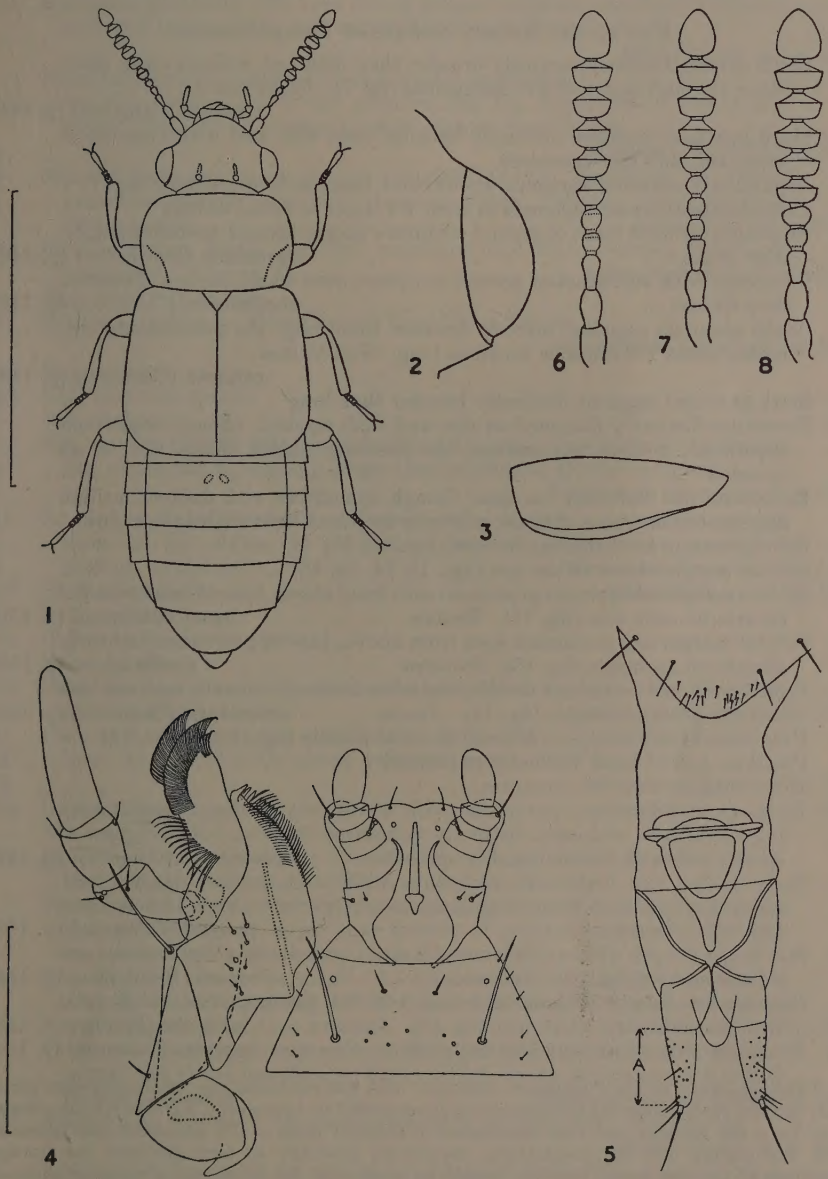
The ground sculpture on the front of the head normally has finer meshes than that on the vertex and the change may be gradual or rather abrupt. The meshes in the lateral pronotal impressions are somewhat coarser than those on the disc. In some species, e.g. *P. tonkinensis* (Cameron), there is some variation, in different specimens, in the size of the meshes of the ground sculpture on the vertex of the head and the disc of the pronotum.

The abdominal tergites, at least the third to fifth, have a ground sculpture of the same type as that on the elytra, but usually distinctly less strong. In some species, the longitudinal elements tend to disappear on the posterior tergites so that the sculpture consists of large transverse meshes. The punctures on the tergites are moderately close but very fine and generally very difficult to see, they are setiferous and the setae, though short and fine, are always distinct. The third to seventh tergites have a transverse row of four larger punctures, which bear long setae, at about the middle of their length.

Many of the species are very closely allied and difficult to separate using external characters, but objective characters, which can be figured, are present in both sexes and make accurate identification a comparatively simple matter. In the males, the aedeagi show appreciable interspecific differences, and in the females, a structure

[2] These setae are the same as those figured for *Xanthonomus* (Steel, 1955, *Ent. mon. Mag.* **91**: 277, fig. 6). The apical portion, which is ribbed and widened, is often difficult to see in "Euparal" mounts under normal illumination but is very distinct under phase contrast illumination.

associated with the ovipositor is equally valuable. This structure, the function of which is unknown, is here referred to as the " accessory sclerite " and its position in the (artificially) extended ovipositor is shown in figure 5. A number of other Omaliine genera have also been examined for this structure and accessory sclerites of widely differing form and degree of sclerotisation have been found in some, but not all,



FIGS. 1–6.—*Paraphloeostiba marianicola*: (1) adult (scale = 1 mm.); (2) eye and side of head; (3) lateral view of pronotum showing margins; (4) maxilla and labium (scale = 0·1 mm.); (5) artificially extended ovipositor to show the position of the " accessory sclerite " (*A*, coxite of last abdominal segment); (6) antenna.

FIGS. 7–8.—Antenna of: (7) *P. alutacea*; (8) *P. rhopalocera*.

of these. In *Paraphloeostiba*, the spermatheca also has a limited value for the separation of species.[3]

The key given below is an attempt to separate the species using external characters as far as possible and should be used in conjunction with the figures of the aedeagi and accessory sclerites.

Key to the Known Species of *Paraphloeostiba*

1 Sixth antennal segment scarcely broader than fifth and without close short setae, the club therefore five-segmented (fig. 7). *Philippine Is.* . . . . **alutacea** (Cameron) (p. 154)

– Sixth antennal segment distinctly broader than fifth and with close short setae, the club six-segmented 2

2 Penultimate antennal segments about three times as broad as long (fig. 7) . 3

– Penultimate antennal segments at most 2·4 times as broad as long . . . 4

3 Pronotum without trace of ground sculpture except around posterior angles. *New Britain* . . . . . **specularis** (Bernhauer) (p. 146)

– Pronotum with well-marked ground sculpture over whole surface. *Sumatra, New Guinea* . . . . . **rhopalocera** (Cameron) (p. 146)

4. Sixth antennal segment scarcely broader than long, the penultimate segments about 1·6 times as broad as long. *New Guinea* **coriacea** (Cameron) (p. 146)

– Sixth antennal segment distinctly broader than long 5

5 Pronotum distinctly flattened on disc and with marked, though sometimes superficial, median impressions, the posterior angles sharp, not at all rounded 6

– Pronotum not flattened on disc though sometimes with distinct median impressions or traces of these, posterior angles at least slightly rounded . 12

6 Orbital margin farther from the eye (figs. 15, 17) 7

– Orbital margin closer to the eye (figs. 12–14, 16, 18) 8

7 Orbital margin rather more prominent seen from above, base of pronotum not sinuate on each side (fig. 17). *Tonkin*. . . . . **opacicollis** sp. n. (p. 150)

– Orbital margin less prominent seen from above, base of pronotum distinctly sinuate on each side (fig. 15). *Sumatra* . . . . . **similis** sp. n. (p. 150)

8 Pronotum broadest behind middle, the sides distinctly sinuate between here and the posterior angles (fig. 14). *Assam* . **assamensis** (Cameron) (p. 149)

– Pronotum broadest at or a little in front of middle (figs. 12, 13, 16, 18) . 9

9 Posterior half of head distinctly punctured 10

– Head without trace of punctures 11

10 Body more depressed, pronotum with a distinct median, longitudinal, impressed line, abdomen distinctly punctured at sides, colour lighter or darker yellowish-brown (fig. 16). *Sumatra* . **impressicollis** (Cameron) (p. 149)

— Body rather less depressed, pronotum without a median, longitudinal, impressed line, punctures of abdomen scarcely visible, body almost black (fig. 18). *Sumatra* . . . . . **secretus** (Cameron) (p. 152)

11 Size larger (length without abdomen 2·2 mm.), punctures of elytra closer and a little coarser (fig. 12). *Formosa* . . . . . **sonani** (Bernhauer) (p. 149)

— Size smaller (length without abdomen 1·95–2·1 mm.), punctures of elytra less close and somewhat finer (fig. 13). *Sumatra* **sulcicolle** (Fauvel) (p. 148)

12 Pronotum with distinct median impressions. *Sumatra* **impressa** (Cameron) (p. 154)

[3] For the study of the " accessory sclerites " and spermathecae, the whole abdomen (or at least the last three segments) was removed and macerated in 10 per cent. KOH in a boiling-water bath for a few minutes and then transferred to distilled water. The ovipositor was extended with fine needles and the preparations transferred gradually to pure glycerine for storage. Drawings of the " accessory sclerites " could be made with the preparations either in water or glycerine, but those of the spermathecae were made before transference to the storing fluid. This was because the change to glycerine, even though gradual, sometimes caused a partial collapse of these organs.

If fewer than the last three abdominal segments are removed, the spermatheca which, after the KOH treatment, is more or less loose in the abdominal cavity, can easily be lost.

— Pronotum at most with superficial median impressions 13
13 Elytra more convex, scarcely flattened on disc, only slightly widened posteriorly, the epipleural keel almost linear seen from above, figs. (19, 20, 22) 14
— Elytra less convex, at least slightly flattened on disc, distinctly widened behind, the epipleural keel broader as seen from above, figs. (23–31) . . 16
14 Head and pronotum with very strong ground sculpture, the former impunctate, the latter with a few very indistinct punctures. *Java*
djawensis sp. n. (p. 154)
— Head and pronotum distinctly and closely punctured 15
15 Sides of pronotum less evenly rounded (fig. 19), punctures in disc of pronotum distinctly finer than those of elytra. *New Guinea*
papuana (Cameron) (p. 153)
— Sides of pronotum more evenly rounded (fig. 20), punctures on disc of pronotum scarcely finer than those on elytra. *Sumatra, Java, Sarawak, Philippine Is.* . . . . . **obesa** (Fauvel) (p. 152)
16 Eyes relatively larger (fig. 24), pronotum and elytra closely and finely punctured. *Solomon Is.* . . . . . **solomonensis** sp. n. (p. 155)
— Eyes relatively smaller 17
17 Species occurring in Australia and Lord Howe Island .
gayndahense (Macleay) (p. 161)
— Not as above 18
18 New Hebrides species 19
— Not as above 20
19 Size smaller (length without abdomen 1·15 mm.), punctures on pronotum and elytra not or scarcely larger than meshes of ground sculpture
hebridensis (Bernhauer) (p. 155)
— Size larger (length without abdomen 1·40–1·45 mm.), punctures coarser, those of the elytra, in particular, distinctly larger than meshes of ground sculpture . . . . . **cheesmani** (Cameron) (p. 157)
20 Seychelles species . . . . . **seychellensis** sp. n. (p. 159)
— Not as above 21
21 Indian or Singhalese species 22
— Not as above 23
22 Pronotum less rounded at sides and elytra relatively longer (fig. 25), body entirely black. *India* . . . . . **subopaca** (Cameron) (p. 157)
— Pronotum more rounded at sides and elytra relatively shorter (fig. 27), at least the humeri of the elytra yellowish-brown. *India, Ceylon*
singulare (Kraatz) (p. 159)
23 Norfolk Island species . . . . . **norfolcensis** sp. n. (p. 161)
— Not as above 24
24 Pronotum and elytra closely punctured, punctures on disc of pronotum distinctly larger than meshes of ground sculpture 25
— Pronotum and elytra less closely punctured, punctures on disc of pronotum not or only slightly larger than meshes of ground sculpture, sometimes very weak or absent 26
25 Pronotum less transverse, about 1·54 times as broad as long, head, pronotum and elytra more shining, unicolorous brownish-yellow, abdomen black with lighter apex. *Java* . . . . . **fruhstorferi** sp. n. (p. 163)
— Pronotum more transverse, about 1·68 times as broad as long, head, pronotum and elytra less shining, dark reddish-brown, abdomen dark brown. *Sumatra, Lombok* . . . . . **sumatrensis** (Bernhauer) (p. 163)
26 Aedeagus as figures 77, 78, accessory sclerite as figure 109. *Mariana Is.*
marianicola sp. n. (p. 165)
— Aedeagus as figures 73, 74, accessory sclerite as figure 103. *Sumatra, Java, Lombok, Philippine Is.* . . . . . **apicalis** (Cameron) (p. 163)
— Aedeagus as figures 75, 76, accessory sclerite as figure 107. *Tonkin, Singapore* . . . . . **tonkinensis** (Cameron) (p. 167)
— Aedeagus as figures 79, 80, female unknown. *Celebes* . **celebensis** sp. n. (p. 169)

Paraphloeostiba specularis (Bernhauer). (Figs. 9, 32, 33)

Phloeonomus specularis Bernhauer, 1915, *Dtsch. ent. Z.* 1915 : 181.

Rather convex. Body, femora, tibiae and sixth to eleventh antennal segments clear reddish-brown, tarsi and first 5 antennal segments yellowish. Length : about 2 mm., without abdomen 1·0 mm. General shape as in figure 9.

Head strongly shining, with only feeble traces of ground sculpture and a few very fine punctures ; tenth antennal segment nearly three times (2·8 times) as broad as long. *Pronotum* strongly shining, very lightly impressed around posterior angles and with no trace of median impressions ; surface with scattered weak and very fine punctures and no ground sculpture except around posterior angles. *Elytra* strongly shining and without ground sculpture, punctures distinctly coarser than those on pronotum but weak and rather indistinct, separated, on the average, by about twice their diameter ; epipleural keel well marked as seen from above. *Abdomen* shining, without visible punctures or ground sculpture. *Aedeagus* as figures 32, 33 ; female unknown.

New Britain : Ralum (*F. Dahl*). One paratype examined from the Bernhauer collection.

A very distinct species because of the colour and the almost complete absence of ground sculpture ; in the structure of the antennae and aedeagus it resembles *P. rhopalocera* (Cameron).

Paraphloeostiba rhopalocera (Cameron). (Figs. 8, 11, 34, 35)

Phloeonomus rhopalocerus Cameron, 1928, *Ent. Mitt.* 17 : 99.

Moderately convex. Head, pronotum and abdomen, except apex, dark brown, sometimes almost black, elytra yellowish-brown with sides and posterior margin infuscate, apex of abdomen yellowish-brown ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 1·55–1·65 mm., without abdomen 1·0–1·05 mm. General shape as in figure 8. In the specimens examined, the pronotum varied from 1·61 to 1·64 times as broad as long and the sutural length of the elytra varied from 1·58 to 1·62 times the length of the pronotum.

Head moderately shining, with a well-marked ground sculpture, with distinct fine punctures rather larger than meshes of ground sculpture, the punctures becoming closer on posterior half where they are separated by two to three times their diameter ; antennae as figure 11. *Pronotum* about as shining as head, ground sculpture always distinct but somewhat variable in strength in different examples ; punctures varying in different examples in size, strength and density, scarcely to distinctly larger than meshes of ground sculpture, very weak to rather strong, separated by not less than twice their diameter, usually more ; lightly impressed on each side around posterior angles, without trace of median impressions. *Elytra* shining, ground sculpture very weak, punctures more or less the same as those on pronotum except that they are never very weak ; epipleural keel well marked as seen from above. *Abdomen* shining, ground sculpture very weak ; closely and very finely punctured on each side of a broad median space, the punctures scarcely visible. *Aedeagus* as figures 34, 35 ; the female apparently without an accessory sclerite.

Sumatra : Fort de Kock, 1926 (*E. Jacobson*) (type) ; Mt. Singalang, July, 1878 (*O. Beccari*). New Guinea : Finschafen, on *Casuaria* (*L. Wagner*).

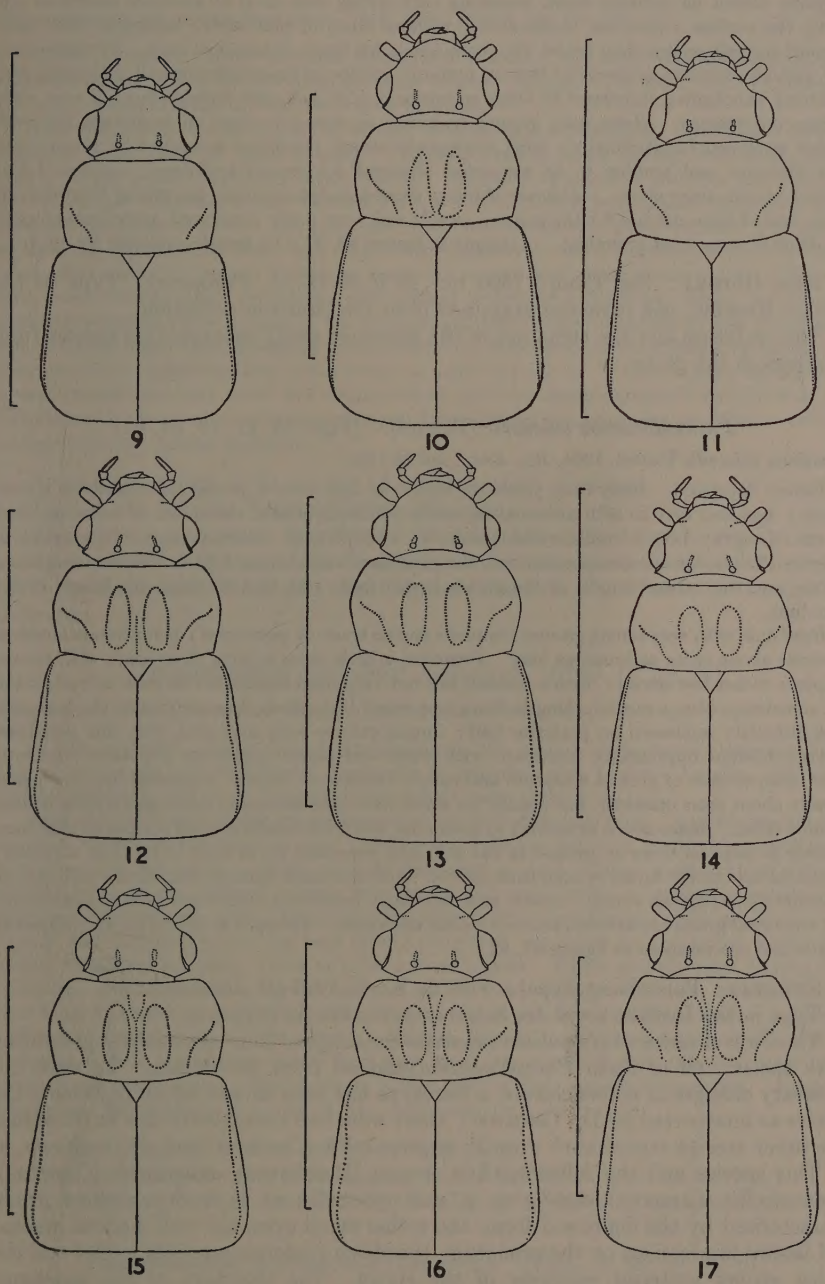
Type in the British Museum (Nat. Hist.).

The structure of the antennae will separate this species from all others except *specularis*, which is very different in colour and sculpture. *P. rhopalocera* is the only species examined in which no trace was found of an accessory sclerite in the female. No female *specularis* were available for study.

Paraphloeostiba coriacea (Cameron). (Figs. 10, 36, 37)

Phloeonomus (*s. str.*) *coriaceus* Cameron, 1952, *Treubia* 21 : 243.

Not very convex. Head black, pronotum black with sides narrowly reddish-brown, elytra blackish-brown with humeri reddish-brown, abdomen blackish-brown with paratergites and apex lighter ; legs reddish-brown, first 5 antennal segments yellowish-brown, remainder dark brown. Length : 2·4 mm., without abdomen 1·6 mm. General shape as in figure 10.



FIGS. 9–17.—Head, pronotum and elytra of: (9) *P. specularis*; (10) *P. coriacea*; (11) *P. rhopalocera*; (12) *P. sonani*; (13) *P. sulcicolle*; (14) *P. assamensis*; (15) *P. similis*; (16) *P. impressicollis*; (17) *P. opacicollis*. (Scale in each case = 1 mm.)

Head very dull except for area in front of level of antennal insertions, which is shining ; ground sculpture absent on extreme front, becoming very strong near level of antennal insertions and giving the surface a granular appearance ; without trace of punctures ; antennae with sixth segment scarcely longer than broad, the tenth about 1·6 times as broad as long. *Pronotum* very dull, ground sculpture as strong as that on posterior portion of head, anterior half with some very indistinct punctures ; impressed at sides on posterior half and with distinct but not very deep median impressions. *Elytra* dull, ground sculpture as strong as that on pronotum but with meshes stretched longitudinally ; with moderately strong punctures separated by about twice their diameter and tending to be somewhat obscured by ground sculpture ; epipleural keel distinct as seen from above. *Abdomen* shining, ground sculpture much less strong than that on elytra and of form normal for the genus ; closely and very finely punctured, punctures more or less distinct, somewhat granulate. *Aedeagus* as figures 36, 37 ; no female available for study.

New Guinea : Sigi Camp, 1500 m., 26.ii.39 (*L. J. Toxopeus*). Type in the Leyden Museum, one paratype examined from the Cameron collection.

The sculpture and the structure of the antennae easily separate this species from all others in the genus.

Paraphloeostiba sulcicolle (Fauvel). (Figs. 13, 42, 43, 81, 82)

Homalium sulcicolle Fauvel, 1904, *Rev. Ent. Caen* **23** : 89.

Rather depressed. Body dark yellowish-brown to dark brown, pronotum sometimes a little lighter ; legs and first to fifth antennal segments yellowish-brown, remainder of antennae dark brown. Length : 1·95–2·1 mm., without abdomen 1·15–1·2 mm. General shape of front parts as in figure 13. In the specimens examined, the pronotum varied from 1·72 to 1·75 times as broad as long and the sutural length of the elytra varied from 1·51 to 1·58 times the length of the pronotum.

Head dull, with very strong ground sculpture and no trace of punctures ; penultimate antennal segments about twice as broad as long. *Pronotum* a little more shining than head, with ground sculpture rather less strong ; with a distinct but not very deep impression on each side of middle and sometimes also a median, longitudinal, impressed line which does not reach the margins ; sides distinctly impressed on posterior half ; impunctate or with scattered, very fine punctures between median impressions, elsewhere with weak and rather indistinct punctures distinctly larger than meshes of ground sculpture and rather variable in density, separated in a few places by only about their diameter, but usually by much more and becoming closer and a little coarser towards sides. *Elytra* about as shining as pronotum and with similar ground sculpture, punctures scarcely as large as those on pronotum but stronger, separated by at least twice their diameter ; epipleural keel rather broad as seen from above. *Abdomen* more shining than elytra with ground sculpture distinctly less strong ; closely and very finely punctured, punctures more or less distinct and somewhat granulate at sides, scarcely visible elsewhere. *Aedeagus* as figures 42, 43 ; accessory sclerite and spermatheca as figures 81, 82.

Sumatra : Palembang (type) ; Fort de Kock, 1926 (*E. Jacobson*).

Type in the Institut royal des Sciences naturelles de Belgique.

The Fauvel series of *Homalium sulcicolle* consisted of four specimens representing three species, all of them *Paraphloeostiba* and all from Palembang. To save unnecessary changes in nomenclature, a lectotype has been chosen which represents the species as interpreted by Dr. Cameron ; there were two examples of this in the series. The other species represented were *P. impressicollis* (Cameron) and *P. similis* sp. n.

This species and the following five, *sonani* (Bernhauer), *assamensis* (Cameron), *impressicollis* (Cameron), *similis* sp. n. and *opacicollis* sp. n. form a distinct group characterised by the depressed form, the rather small eyes, the well-marked median and lateral impressions on the pronotum, the sharp posterior pronotal angles and the rather strong posterior widening of the elytra. The structure of the aedeagus, accessory sclerite and spermatheca subdivides the group into *sulcicollis—sonani—assamensis* and *impressicollis—similis—opacicollis*.

P. secretus (Cameron) is rather similar but is a little less depressed and has a very different accessory sclerite.

Paraphloeostiba sonani (Bernhauer). (Figs. 12, 44–46)

Phloeonomus (*s. str.*) *sonani* Bernhauer, 1943, *Mitt. Münch. ent. Ges.* **33** : 171.

Rather depressed. Body very dark brown, almost black ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 2·2 mm., without abdomen 1·35 mm. General shape of front parts as in figure 12.

Head dull, the ground sculpture very strong, without trace of punctures ; penultimate antennal segments about twice as broad as long. *Pronotum* scarcely more shining than head, with a similar strong ground sculpture, rather strongly impressed at sides on posterior half and with marked median impressions and, between these, a very indistinct longitudinal impression which does not reach the margins ; the punctures weak and indistinct, sparse between the median impressions, separated by more than twice their diameter in these impressions and not much larger than meshes of ground sculpture, becoming coarser and closer towards sides. *Elytra* a little more shining than pronotum, with ground sculpture a little less strong, much more distinctly punctured than pronotum, the punctures a little coarser than those on disc of pronotum and distinctly larger than meshes of ground sculpture, separated, on the average, by about twice their diameter ; epipleural keel rather broad as seen from above. *Abdomen* more shining than elytra, ground sculpture much less strong, closely and very finely punctured on each side of a rather broad median impunctate space, the punctures distinct and somewhat granulate. *Aedeagus* as figures 44–46 ; female unknown.

Formosa : Arisan, 2–23.x.1918 (*J. Sonan and M. Yoshino*).

Type in the Chicago Natural History Museum.

This species is close to *P. sulcicolle* (Fauvel) but differs in the larger size, the stronger ground sculpture on the head, pronotum and elytra, the less distinct pronotal punctures and coarser and closer elytral punctures as well as in the form of the aedeagus.

Paraphloeostiba assamensis (Cameron). (Figs. 14, 83, 84)

Phloeonomus (*s. str.*) *assamensis* Cameron, 1930, *Fauna Brit. India, Col. Staph.* **1** : 145.

Rather depressed. Body dark yellowish-brown, the head a little darker ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 1·75 mm., without abdomen 1·05 mm. General shape of front parts as in figure 14.

Head dull, with very strong ground sculpture and no visible punctures ; penultimate antennal segments about twice as broad as long. *Pronotum* a little less dull than head, with ground sculpture somewhat less strong ; rather strongly impressed on each side on posterior half and with distinct but rather superficial median impressions and with hardly a trace of a longitudinal impressed line between these ; impunctate between median impressions, elsewhere finely, very weakly and indistinctly and not very closely punctured, punctures on disc rather larger than meshes of ground sculpture, those at sides a little coarser. *Elytra* scarcely more shining than pronotum, ground sculpture hardly less strong, punctures stronger and more distinct, coarser than those on pronotum and separated by, on the average, about twice their diameter ; epipleural keel rather broad as seen from above. *Abdomen* slightly more shining than elytra, ground sculpture a little less strong, closely and very finely punctured on each side of a rather broad median impunctate space, punctures more or less distinct and somewhat granulate. Accessory sclerite and spermatheca as figures 83, 84 ; male unknown.

Assam : Naga Hills, 4000 feet (*S. N. Chatterjee*).

Type and one paratype, both females, in the British Museum (Nat. Hist.).

P. assamensis is quite distinct from its allies in the shape of the pronotum.

Paraphloeostiba impressicollis (Cameron). (Figs. 16, 38, 39, 86, 87)

Phloeonomus (*s. str.*) *impressicollis* Cameron, 1924, *Ann. Mus. Civ. Genova* **51** : 312.

Rather depressed. Body lighter or darker yellowish-brown ; legs and first to fifth antennal segments yellowish-brown, remainder of antennae dark brown. Length : 2·3–2·55 mm., without abdomen 1·3–1·45 mm. General shape of front parts as in figure 16. In the specimens examined,

the pronotum varied from 1·70 to 1·76 times as broad as long and the sutural length of the elytra varied from 1·57 to 1·60 times the length of the pronotum.

Head dull, ground sculpture very strong except on clypeus, where it is distinctly weaker, posterior half with scattered, moderately strong but somewhat indistinct punctures ; penultimate antennal segments about twice as broad as long. *Pronotum* moderately shining, ground sculpture somewhat variable in strength in different examples but less strong than on head ; with distinct, but not very deep median impressions and between these a marked, but only superficial, longitudinal, impressed line which does not reach the margins ; sides rather broadly impressed on posterior half ; more or less impunctate between median impressions, elsewhere with distinct and rather strong punctures which vary somewhat in size in different examples, those on disc scarcely to distinctly larger than meshes of ground sculpture and separated by once to twice their diameter, becoming closer and a little coarser towards sides. *Elytra* about as shining as pronotum and with similar ground sculpture, punctures as coarse as or a little coarser than those on disc of pronotum, distinctly larger than meshes of ground sculpture and separated, on the average, by about twice their diameter ; epipleural keel rather broad as seen from above. *Abdomen* more shining than elytra with ground sculpture distinctly less strong, closely and very finely punctured, the punctures more or less distinct and somewhat granulate at sides, scarcely visible elsewhere. *Aedeagus* as figures 38, 39 ; accessory sclerite and spermatheca as figures 86, 87.

Sumatra : Fort de Kock, Aug., 1894 (*E. Modigliani*) (type), 1926 (*E. Jacobson*) ; Palembang.

Type in the Museo Civico di Storia Naturale, Genoa.

This species differs from *P. sulcicollis*, which also occurs in Sumatra, in the larger size, the distinctly punctured head, the coarser and closer punctures on the pronotum and elytra and the distinct median longitudinal impressed line on the former. The colour is generally lighter and the aedeagus, accessory sclerite and spermatheca are quite different.

Paraphloeostiba similis sp. n. (Figs. 15, 40, 41)

Rather depressed. Body yellowish-brown, the pronotum a little lighter ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 2·2 mm., without abdomen 1·35 mm. General shape of front parts as in figure 15.

Head dull, with a very strong ground sculpture, posterior half with scattered punctures which are very weak and difficult to see ; penultimate antennal segments about twice as broad as long. *Pronotum* less dull than head with ground sculpture somewhat weaker, sides strongly and rather broadly impressed on posterior half ; with distinct but not very deep median impressions and between these a marked longitudinal impressed line which is widened behind ; punctures weak and rather indistinct, those on disc distinctly larger than meshes of ground sculpture and irregularly spaced, separated in places by only about their diameter, becoming coarser and very indistinct at sides. *Elytra* more shining than pronotum, ground sculpture a little less strong, punctures stronger and more distinct than those on pronotum, distinctly larger than meshes of ground sculpture and separated, on the average, by about twice their diameter ; epipleural keel rather broad as seen from above. *Abdomen* slightly more shining than elytra, ground sculpture much less strong, closely and very finely punctured, punctures distinct and somewhat granulate at sides, hardly visible in the middle. *Aedeagus* as figures 40, 41 ; female unknown.

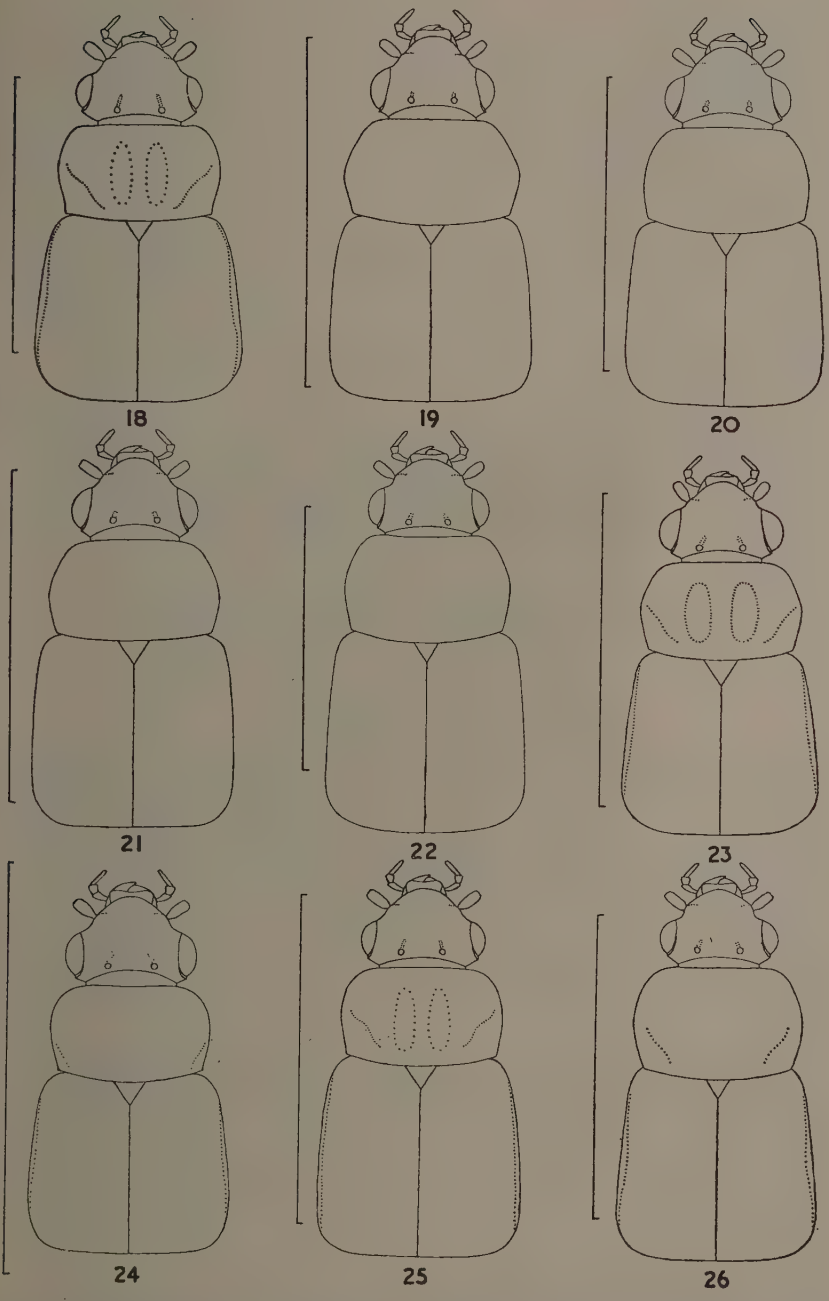
Sumatra : Palembang. Type in the Institut royal des Sciences naturelles de Belgique ; no further specimens seen.

P. similis is close to *impressicollis* (Cameron) but differs in the greater distance between the orbital margin and the eye, the sinuate base of the pronotum and the weaker and less distinct punctures on the head and pronotum, as well as the form of the aedeagus.

Paraphloeostiba opacicollis sp. n. (Figs. 17, 88)

Phloeonomus opacicollis Bernhauer, 1943, *Mitt. Münch. ent. Ges.* **33** : 171, nomen nudum.

Rather depressed. Pronotum and abdomen dark yellowish-brown, head and elytra, except humeri, darker brown ; legs and first to fifth antennal segments yellowish-brown, remainder of



FIGS. 18–26.—Head, pronotum and elytra of: (18) *P. secretus*; (19) *P. papuana*; (20) *P. obesa*; (21) *P. alutacea*; (22) *P. djawensis*; (23) *P. impressa*; (24) *P. solomonensis*; (25) *P. subopaca*; (26) *P. fruhstorferi*. (Scale in each case = 1 mm.).

antennae dark brown. Length: 2·5 mm., without abdomen 1·5 mm. General shape of front parts as in figure 17.

Head dull, ground sculpture very strong, with a few very indistinct punctures; penultimate antennal segments about twice as broad as long. *Pronotum* a little less dull than head, with ground sculpture rather less strong, strongly and rather broadly impressed at sides on posterior half; with distinct median impressions and between these a marked, narrow, longitudinal fovea; punctures distinct and moderately strong, those on disc distinctly larger than meshes of ground sculpture and irregularly spaced, becoming closer and somewhat coarser at sides. *Elytra* more shining than pronotum, ground sculpture less strong, punctures a little stronger and somewhat coarser than those on disc of pronotum, distinctly larger than meshes of ground sculpture and separated, on the average, by about twice their diameter; epipleural keel rather broad as seen from above. *Abdomen* moderately shining, ground sculpture weak, closely and very finely punctured, the punctures distinct and somewhat granulate on each side, very indistinct in the middle. Accessory sclerite as figure 88, spermatheca as in *impressicollis* (fig. 87); male unknown.

Tonkin: Hoa-Binh, 1920 (*Clermont*). Type, unique, in the Chicago Natural History Museum.

In his description of *P. sonani*, Bernhauer compared it with "*Phloeonomus opacicollis* Bernh. aus Tonkin". There is one specimen under this name in the Bernhauer collection but no further mention of the species has been traced in the literature and it is therefore described as new. *P. opacicollis* resembles *similis* in the position of the orbital margin but differs in the shape of the pronotum, which is also more distinctly punctured, and in the somewhat stronger ground sculpture of the head.

Paraphloeostiba secretus (Cameron). (Figs. 18, 85)

Phloeonomus secretus Cameron, 1928, *Ent. Mitt.* **17**: 98.

Somewhat depressed. Body very dark brown, almost black; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length: 2·25 mm., without abdomen 1·35 mm. General shape of front parts as in figure 18.

Head slightly shining, ground sculpture strong, posterior half with scattered distinct punctures rather larger than meshes of ground sculpture; penultimate antennal segments about twice as broad as long. *Pronotum* a little more shining than head but with ground sculpture hardly less strong, distinctly impressed at sides on posterior half and with marked but rather superficial median impressions; more or less impunctate between median impressions, elsewhere with distinct punctures which vary in size, in the same specimen, from slightly to distinctly larger than meshes of ground sculpture and are separated by about twice diameter of larger ones; punctures scarcely becoming coarser towards sides. *Elytra* rather more shining than pronotum, ground sculpture hardly less strong but with somewhat larger meshes, punctures similar to those on pronotum; epipleural keel well marked as seen from above. *Abdomen* about as shining as elytra, with ground sculpture similar in strength, punctures close and very fine, scarcely visible even at the sides. Accessory sclerite as in figure 85; male unknown.

Sumatra: Gunung Singgalang (*E. Jacobson*).

Type and one paratype, both females, in the British Museum (Nat. Hist.).

In general form, this species is rather similar to the preceding six, but it differs in the somewhat less depressed form, the distinctly weaker ground sculpture on the head, the less broad lateral impressions on the pronotum and the absence on it of a median impressed longitudinal line or fovea. The accessory sclerite of the female is also quite different.

Paraphloeostiba obesa (Fauvel). (Figs. 20, 47, 48, 91)

Homalium obesum Fauvel, 1904, *Rev. Ent., Caen* **23**: 89.
Phloeonomus densepunctatus Bernhauer, 1915, *Verh. zool.-bot. Ges. Wien* **65**: 135 **syn. n.**

Moderately convex. Wholly lighter or darker yellowish-brown; sixth to eleventh antennal segments sometimes darker than the remainder. Length: 1·85–2·2 mm., without abdomen 1·15–1·25 mm. General shape of front parts as in figure 20. In the specimens examined, the

pronotum varied from 1·57 to 1·60 times as broad as long and the sutural length of the elytra varied from 1·45 to 1·50 times the length of the pronotum.

Head moderately shining, ground sculpture rather strong; with fine, moderately strong punctures distinctly larger than meshes of ground sculpture and separated by less than twice their diameter; penultimate antennal segments about twice as broad as long. *Pronotum* as shining as head and with similar ground sculpture, very lightly impressed around posterior angles and without any trace of median impressions; strongly punctured, the punctures somewhat variable in size in different examples but always larger than meshes of ground sculpture and separated by from not much more than their diameter to about twice their diameter according to size. *Elytra* a little more shining than pronotum, ground sculpture somewhat less strong, punctures as on pronotum; epipleural keel very narrow as seen from above. *Abdomen* more shining than elytra and with weaker ground sculpture, the punctures not at all distinct. *Aedeagus* as figures 47, 48; accessory sclerite as figure 91.

Sumatra: Deli region, in imported tobacco (type). Java: Soekabaeni. Sarawak: Mt. Matang, 3.xii.13 (*J. C. Moulton*) (type of *densepunctatus*), Dec., 1913 (*G. E. Bryant*); Quop, Feb.–Mar., 1914 (*G. E. Bryant*). Philippine Is.: Luzon, Mt. Banahao.

Type in the Institut royal des Sciences naturelles de Belgique.

The Fauvel series of *P. obesa* contains four examples, three of which, all of them females, are syntypes. One of these has been selected as lectotype. This species and the following three, *papuana* (Cameron), *alutacea* (Cameron), and *djawensis* sp. n., form a species group characterised by the moderately convex form with the pronotum scarcely impressed at the sides and without trace of median impressions and the elytra scarcely widened behind with the sides deflexed in such a way that the epipleural keel appears very narrow when viewed from above. There is also a similarity in the form of the aedeagus and the accessory sclerite.

Paraphloeostiba papuana (Cameron). (Fig. 19)

Phloeonomus (*s. str.*) *papuanus* Cameron, 1931, *Rec. S. Aust. Mus.* **4**: 356.

Moderately convex. Body, legs and seventh to eleventh antennal segments reddish-brown, remainder of antennae a little lighter. Length: 1·9 mm., without abdomen 1·1 mm. General shape of front parts as in figure 19.

Head moderately shining, with strong ground sculpture, finely and strongly punctured, the punctures not much larger than meshes of ground sculpture and separated by about twice their diameter; penultimate antennal segments about twice as broad as long, sixth segment rather narrow compared with seventh, distinctly broader than fifth. *Pronotum* moderately shining, ground sculpture as on head, without trace of median impressions, lightly impressed around posterior angles; distinctly and moderately strongly punctured, the punctures scarcely larger than meshes of ground sculpture and separated, on the average, by about twice their diameter. *Elytra* a little more shining than pronotum with ground sculpture rather less strong, regularly punctured, the punctures distinctly coarser than those on pronotum and distinctly larger than meshes of ground sculpture, separated by about twice their diameter; epipleural keel very narrow as seen from above. *Abdomen* more shining than elytra, ground sculpture distinctly weaker, punctures scarcely visible. Accessory sclerite as in *obesa* (fig. 91); male unknown.

New Guinea: Mt. Lamington, 1300–1500 feet (*C. T. Mc.Namara*) (type); Finschafen, Jan.–Apr., 1944 (*J. R. Helfer*).

Type in the British Museum (Nat. Hist.).

There appears to be no difference between the accessory sclerite of this species and that of the allied *P. obesa*, but the two species can easily be separated by external characters. The pronotal punctures of *papuana* are distinctly finer than those of the elytra, whereas in *obesa* they are of about the same size. In *papuana*, also, the sides of the pronotum are less evenly rounded than in *obesa* and the sixth antennal segment is narrower compared with the seventh and less closely setose, *i.e.* more or less intermediate between that of *obesa* and that of *alutacea*.

Paraphloeostiba alutacea (Cameron). (Figs. 7, 21, 49, 50)

Phloeonomus (*s. str.*) *alutaceus* Cameron, 1941, *Ann. Mag. nat. Hist.* (11) **7** : 431.

Moderately convex. Body, legs, except tarsi, and seventh to eleventh antennal segments yellowish-brown, tarsi and first 6 antennal segments lighter. Length : 2 mm., without abdomen 1·15 mm. General shape of front parts as in figure 21.

Head dull, ground sculpture very strong, giving the surface a scaly appearance, without trace of punctures ; antennae as figure 7, sixth segment without close fine setae. *Pronotum* dull, with similar ground sculpture to head, scarcely impressed around posterior angles and without trace of median impressions ; finely and regularly but very weakly and indistinctly punctured, the punctures a little larger than meshes of ground sculpture and separated by less than twice their diameter. *Elytra* more shining than pronotum with ground sculpture distinctly less strong, the punctures regular and about the same size as those on pronotum but distinct and much stronger, separated by about twice their diameter ; epipleural keel very narrow as seen from above. *Abdomen* moderately shining, ground sculpture much weaker than on elytra, punctures scarcely visible. *Aedeagus* as figures 49, 50 ; female unknown.

Philippine Is. : Luzon, Imugan.

Type in the British Museum (Nat. Hist.).

A very distinct species because of the structure of the antennae. Otherwise, obviously allied to the preceding two species but differing from both in the sculpture of the head and pronotum.

Paraphloeostiba djawensis sp. n. (Figs. 22, 92)

Moderately convex. Body rather dark brown except for sides of pronotum, humeri and sides of elytra and apex of abdomen which are lighter ; legs and antennae yellowish-brown. Length : 2·3 mm., without abdomen 1·45 mm. General shape of front parts as figure 22.

Head dull with a very strong ground sculpture and no trace of punctures ; penultimate antennal segments about twice as broad as long. *Pronotum* dull with ground sculpture as on head, scarcely impressed around posterior angles and without trace of median impressions ; disc with a few weak and indistinct punctures, scarcely as large as meshes of ground sculpture. *Elytra* a little more shining than pronotum but ground sculpture hardly less strong ; except at sides with weak not very close punctures not much larger in front than meshes of ground sculpture and gradually becoming finer posteriorly until they finally disappear on apical fourth ; sides with coarser and stronger punctures also becoming finer posteriorly but persisting for entire length ; epipleural keel very narrow as seen from above. *Abdomen* more shining than elytra with ground sculpture distinctly weaker, punctures scarcely visible. Accessory sclerite as figure 92 ; male unknown.

Java : Tjibodas, 4000 feet, Jan., 1936 (*L. E. Cheesman*). Type, unique, in the British Museum (Nat. Hist.).

P. djawensis is related to the preceding three species in the form of the pronotum and elytra and the accessory sclerite of the female, but is very different in sculpture. The accessory sclerite is only lightly sclerotised and its margins are very difficult to see.

Paraphloeostiba impressa (Cameron) (Figs. 23, 51, 52)

Phloeonomus impressus Cameron, 1928, *Ent. Mitt.* **17** : 98.

Rather convex. Body yellowish-brown, apex and sides of elytra narrowly darker ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 2·0 mm., without abdomen 1·15 mm. General shape of front parts as figure 23.

Head moderately shining, ground sculpture well marked but not very strong, posterior half with distinct, not very strong, punctures distinctly larger than meshes of ground sculpture and separated by about twice their diameter ; penultimate antennal segments about twice as broad as long. *Pronotum* moderately shining with ground sculpture as on head, distinctly impressed on each side on posterior half and with well-marked median impressions ; punctures distinct and

not very strong, similar to those on head, separated by, on the average, about twice their diameter. *Elytra* more shining than head and pronotum, ground sculpture rather less strong, punctures similar in size and density to those on pronotum but distinctly stronger; epipleural keel well marked as seen from above. *Abdomen* moderately shining, ground sculpture less strong than that on elytra, punctures very indistinct. *Aedeagus* as figures 51, 52; female unknown.

SUMATRA: Fort de Kock, 920 m., 1925 (*E. Jacobson*). Type, unique, in the British Museum (Nat. Hist.).

This species is very distinct because of the rather convex form with well-marked median pronotal impressions.

Paraphloeostiba solomonensis sp. n. (Figs. 24, 53, 54)

Not very convex. Head, pronotum and abdomen dark brown, the elytra a little lighter; legs and first 5 antennal segments yellowish-brown, remainder of antennae darker brown. Length: 1·4 mm., without abdomen 0·90 mm. General shape of front parts as in figure 24.

Head rather shining, ground sculpture distinct but not very strong, with scattered very fine punctures scarcely as large as meshes of ground sculpture; penultimate segments of antennae about twice as broad as long. *Pronotum* a little more shining than head, ground sculpture similar, lightly impressed around posterior angles and with faint traces of median impressions; with a narrow, median, longitudinal, impunctate space, elsewhere with distinct but rather weak punctures scarcely larger than meshes of ground sculpture and separated by not much more than twice their diameter. *Elytra* shining, ground sculpture less strong than that on pronotum and with somewhat larger meshes, punctures stronger and a little coarser than those on pronotum but not much larger than meshes of ground sculpture, separated by about twice their diameter; epipleural keel distinct as seen from above. *Abdomen* shining and with ground sculpture similar to that on elytra, closely and very finely punctured, the punctures not very distinct. *Aedeagus* as figures 53, 54; female unknown.

SOLOMON ISLANDS: Guadalcanal, Kukum, 15.i.55 (*E. S. Brown*). Type, unique, in the British Museum (Nat. Hist.).

P. solomonensis does not appear to be closely allied to any other known species. It is characterised by the small size, fine and rather close puncturation and the relatively large head with large eyes and a comparatively short distance between the posterior margin of these and the neck.

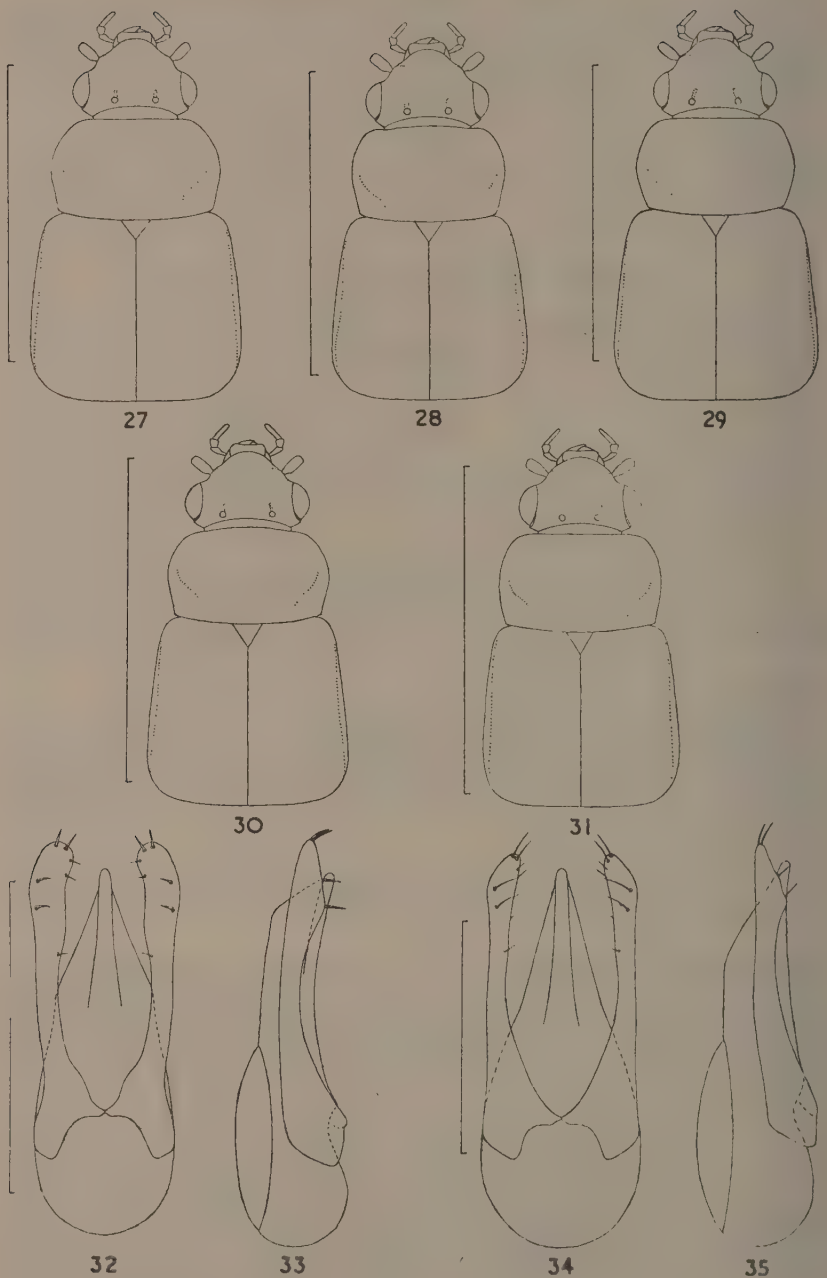
Paraphloeostiba hebridensis (Bernhauer). (Figs. 57, 58)

Phloeonomus hebridensis Bernhauer, 1934, *Stylops* **3**: 18.

Moderately convex. Head dark reddish-brown, pronotum dark reddish-brown with sides lighter, elytra yellowish-brown, abdomen dark brown with apex lighter; legs and first to fifth antennal segments yellowish-brown, remainder of antennae dark brown. Length: 2·0 mm., without abdomen 1·15 mm. General shape as in *P. tonkinensis* (Cameron) (fig. 31). The pronotum about 1·59 times as broad as long, sutural length of elytra about 1·52 times length of pronotum.

Head rather shining, ground sculpture moderately strong with scattered very fine punctures which are finer than meshes of ground sculpture; penultimate antennal segments 2·4 times as broad as long. *Pronotum* about as shining as head and with similar ground sculpture, lightly impressed on each side on posterior half and without trace of median impressions; with scattered, not very strong punctures much smaller than meshes of ground sculpture on disc and a little larger than these at sides. *Elytra* rather more shining than pronotum with ground sculpture a little less strong, punctures similar to those at sides of pronotum, separated by at least twice their diameter; epipleural keel distinct as seen from above. *Abdomen* shining, ground sculpture weaker than that on elytra, punctures very indistinct. *Aedeagus* as figures 57, 58; no female available for study.

NEW HEBRIDES: NE. Malekula, Jan., 1930 (*L. E. Cheesman*) (type); Tanna, Sept., 1930 (*L. E. Cheesman*). Type in the British Museum (Nat. Hist.).



Figs. 27–31.—Head, pronotum and elytra of: (27) *P. singulare*; (28) *P. gayndahense*; (29) *P. norfolcensis*; (30) *P. apicalis*; (31) *P. tonkinensis*. (Scale in each case = 1 mm.)

Figs. 32–35.—Ventral and lateral views of aedeagus of: (32, 33) *P. specularis*; (34, 35) *P. rhopalocera*. (Scale in each case = 0·2 mm.)

The very fine punctures on the disc of the pronotum and the structure of the antennae, as well as the form of the aedeagus, will separate this species from any other.

Specimens from Guam identified by Bernhauer as *P. hebridensis* are *P. marianicola* sp. n.

Paraphloeostiba cheesmani (Cameron). (Figs. 55, 56, 93, 94)

Phloeonomus (*s. str.*) *cheesmani* Cameron, 1934, *Stylops* **3** : 20.

Moderately convex. Body dark yellowish-brown with base and sides of pronotum, humeri and apex of abdomen lighter ; legs and first 5 antennal segments yellowish-brown, sixth to eleventh antennal segments dark brown. Length : 2·35–2·6 mm., without abdomen 1·40–1·45 mm. General shape of front parts as in *P. gayndahense* (Macleay) (fig. 28). In the specimens examined, the pronotum varied from 1·57 to 1·59 times as broad as long and the sutural length of the elytra from 1·58 to 1·60 times the length of the pronotum.

Head moderately shining, ground sculpture distinct and rather strong except on clypeus, with scattered fine punctures larger than meshes of ground sculpture ; penultimate segments of antennae rather less than twice (about 1·8 times) as broad as long. *Pronotum* as shining as head and with rather strong ground sculpture, distinctly impressed on each side on rather more than posterior half and sometimes with traces of median impressions ; puncturation distinct but not very strong, punctures on disc somewhat variable in size in different examples, scarcely as large as meshes of ground sculpture to distinctly larger than these, those at sides always distinctly larger than meshes of ground sculpture, separated on disc by about twice their diameter or a little more according to size. *Elytra* more shining than head and pronotum with ground sculpture less strong, punctures distinctly stronger but not much coarser than those at sides of pronotum, distinctly larger than meshes of ground sculpture, separated, on the average, by about twice their diameter ; epipleural keel distinct as seen from above. *Abdomen* rather shining, ground sculpture much less strong than that on elytra, closely and very finely, scarcely visibly, punctured. *Aedeagus* as figures 55, 56 ; accessory sclerite and spermatheca as figures 93, 94.

New Hebrides : Tanna, Sept., 1930 (*L. E. Cheesman*). Type in the British Museum (Nat. Hist.).

This species is easily distinguished from the other New Hebrides species of the genus, *P. hebridensis* (Bernhauer), by the larger size, the less transverse sixth to eleventh antennal segments, the longer elytra which are more coarsely punctured, as is the pronotum, and the form of the aedeagus. The accessory sclerite is very characteristic and quite unlike that of any other species examined.

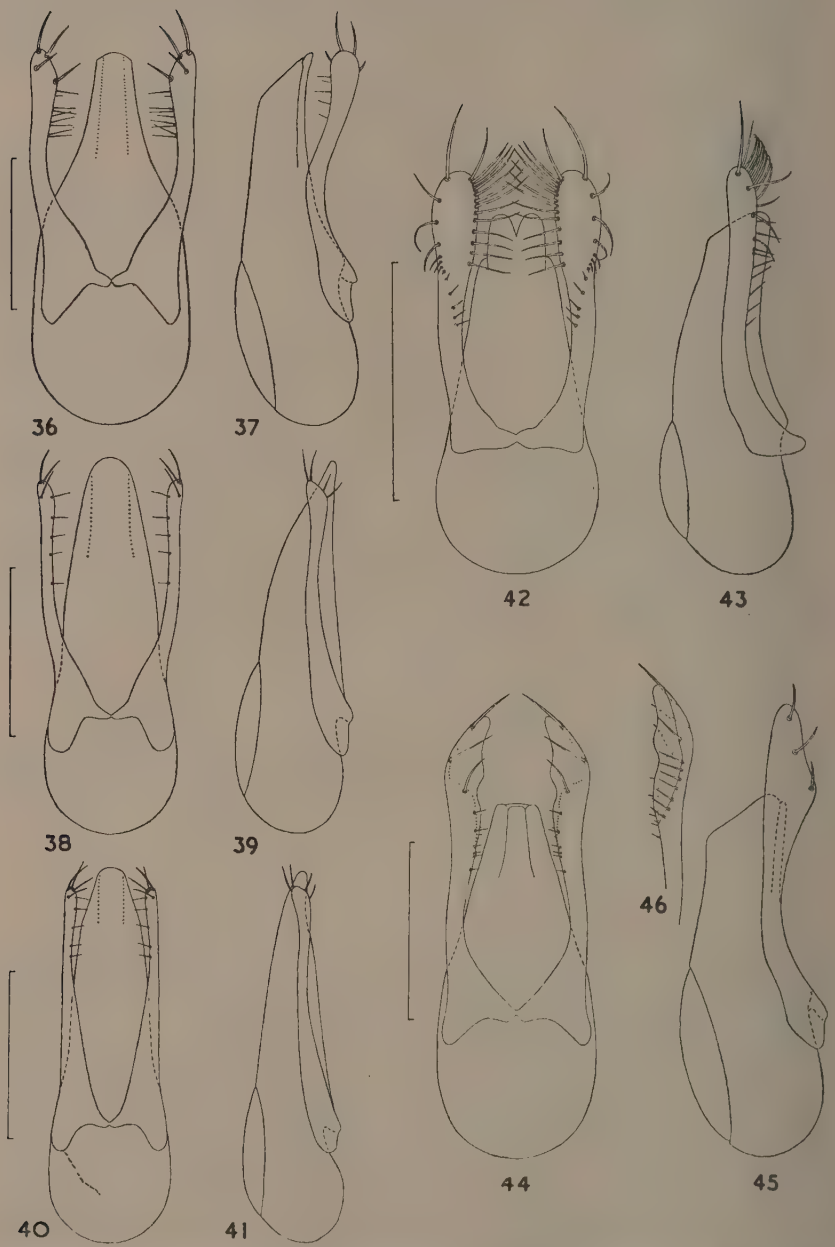
Paraphloeostiba subopaca (Cameron). (Figs. 25, 59, 60, 89, 90)

Phloeonomus (*s. str.*) *subopacus* Cameron, 1924, *Trans. R. ent. Soc. Lond.* **75** : 168.

Moderately convex. Body very dark brown to black, humeri sometimes obscurely lighter ; legs and first to fifth antennal segments yellowish-brown, remainder of antennae darker. Length : 2·0–2·4 mm., without abdomen 1·15–1·2 mm. General shape of front parts as figure 25. In the specimens examined, the pronotum is 1·55–1·59 times as broad as long.

Head rather dull, ground sculpture strong, posterior half with scattered, rather weak and indistinct punctures a little larger than meshes of ground sculpture ; penultimate antennal segments about twice as broad as long. *Pronotum* as dull as head and with similar ground sculpture, lightly impressed on each side on posterior half and with superficial median impressions ; impunctate between median impressions, elsewhere with punctures stronger than those on head, distinctly larger than meshes of ground sculpture, separated by at least twice their diameter and becoming less strong at sides. *Elytra* rather dull, ground sculpture similar to that on pronotum or a little less strong, the punctures similar to those on disc of pronotum and separated by about twice their diameter ; epipleural keel well marked as seen from above. *Abdomen* moderately shining, ground sculpture much less strong than that on front parts, the punctures scarcely visible. *Aedeagus* as figures 59, 60 ; accessory sclerite and spermatheca as figures 89, 90.

India : Simla Hills, Gahan, 7000 feet, Sept., 1921 (type), Kotgarh, 7000 feet, Sept., 1921, Fagu, 8000 feet, under bark, Sept., 1921 ; Chakrata district, Kanasar, under bark, May, 1922 (all *M. Cameron*).



Figs. 36–45.—Ventral and lateral views of aedeagus of : (36, 37) *P. coriacea* ; (38, 39) *P. impressicollis* ; (40, 41) *P. similis* ; (42, 43) *P. sulcicolle* ; (44, 45) *P. sonani*. (Scale in each case = 0·2 mm.)

Fig. 46.—Dorsal view of tip of paramere of *P. sonani* to same scale as fig. 44.

Type in the British Museum (Nat. Hist.).

P. subopacus differs from *P. singulare* (Kraatz), which also occurs in India, in the longer, less shining, more finely and less strongly punctured elytra, the duller head and pronotum and the structure of the aedeagus and accessory sclerite.

Paraphloeostiba singulare (Kraatz). (Figs. 27, 63, 64, 95, 96)

Omalium singulare Kraatz, 1859, *Arch. Naturgesch.* **25** : 181.
Omalium angulatum Motschulsky, 1861, *Bull. Soc. Nat. Moscou* **34** : 142.
Phloeonomus (*s. str.*) *singulare* (Kraatz), Bernhauer, 1910, *Col. Cat.* **19** : 59.

Moderately convex. Head, pronotum and abdomen, except apex which is lighter, very dark brown to black, elytra with at least the humeri, sometimes the greater part, yellowish-brown; legs and first 5 antennal segments yellowish-brown, remainder of antennae darker. Length: 1·8–1·9 mm., without abdomen 1·15–1·25 mm. General shape of front parts as figure 27. In the specimens examined, the pronotum varied from 1·66 to 1·69 times as broad as long and the sutural length of the elytra from 1·56 to 1·61 times the length of the pronotum.

Head not very shining except sometimes in front, ground sculpture strong but sometimes rather weak on clypeus; punctures very sparse and indistinct in front, much closer and rather strong on posterior half where they are distinctly larger than meshes of ground sculpture and separated by not much more than their diameter; penultimate segments of antennae about twice as broad as long. *Pronotum* not very shining, ground sculpture similar to that on head, distinctly impressed on each side on posterior half and usually with very superficial median impressions or traces of these; generally not or only very sparsely punctured between median impressions, elsewhere with rather weak and sometimes indistinct punctures; on the disc these latter finer than those on head, as large as or not much larger than meshes of ground sculpture and separated by about twice their diameter; at sides sometimes coarser. *Elytra* a little more shining than head and pronotum and with ground sculpture less strong, punctures stronger and coarser than those on disc of pronotum, distinctly larger than meshes of ground sculpture and separated by about twice their diameter; epipleural keel well marked as seen from above. *Abdomen* moderately shining with ground sculpture less strong than that on elytra, the punctures not very distinct. *Aedeagus* as figures 63, 64, accessory sclerite and spermatheca as figures 95, 96.

Ceylon (type): Colombo (type of *angulatum*). India: Nilgiri Hills (*H. E. Andrewes*); Ghum district, Rongdong Valley, May–June, 1931 (*M. Cameron*).

Fauvel (1903, *Rev. Ent. Caen* **22** : 258) records this species from Celebes, Lombok, Java, Sumatra, Borneo, Ceylon and New Caledonia. Bernhauer (1920, *Ark. Zool.* **13** : 5) records it from Australia, Ceylon, S. India, Philippine Is. and the Seychelles, and Scheerpeltz (1933, *Col Cat.* **129** : 1050) gives India, Sumatra, Philippine Is. and Australia. All these records, with the exception of Ceylon and India, are, however, based on misidentifications.

The Fauvel series of the insect has been examined and, in addition to one specimen of *singulare* from Ceylon, apparently from the Kraatz collection and labelled " Omalium singulare Kraatz type ", contained *P. apicalis* (Cameron) from Java and Sumatra, *P. celebensis* sp. n. from Celebes, *P. rhopalocera* (Cameron) from Sumatra, *P. sumatrensis* (Bernhauer) from Lombok and *Ulommia antennata* gen. et sp. n. from Sumatra. There was no material from Borneo or New Caledonia.

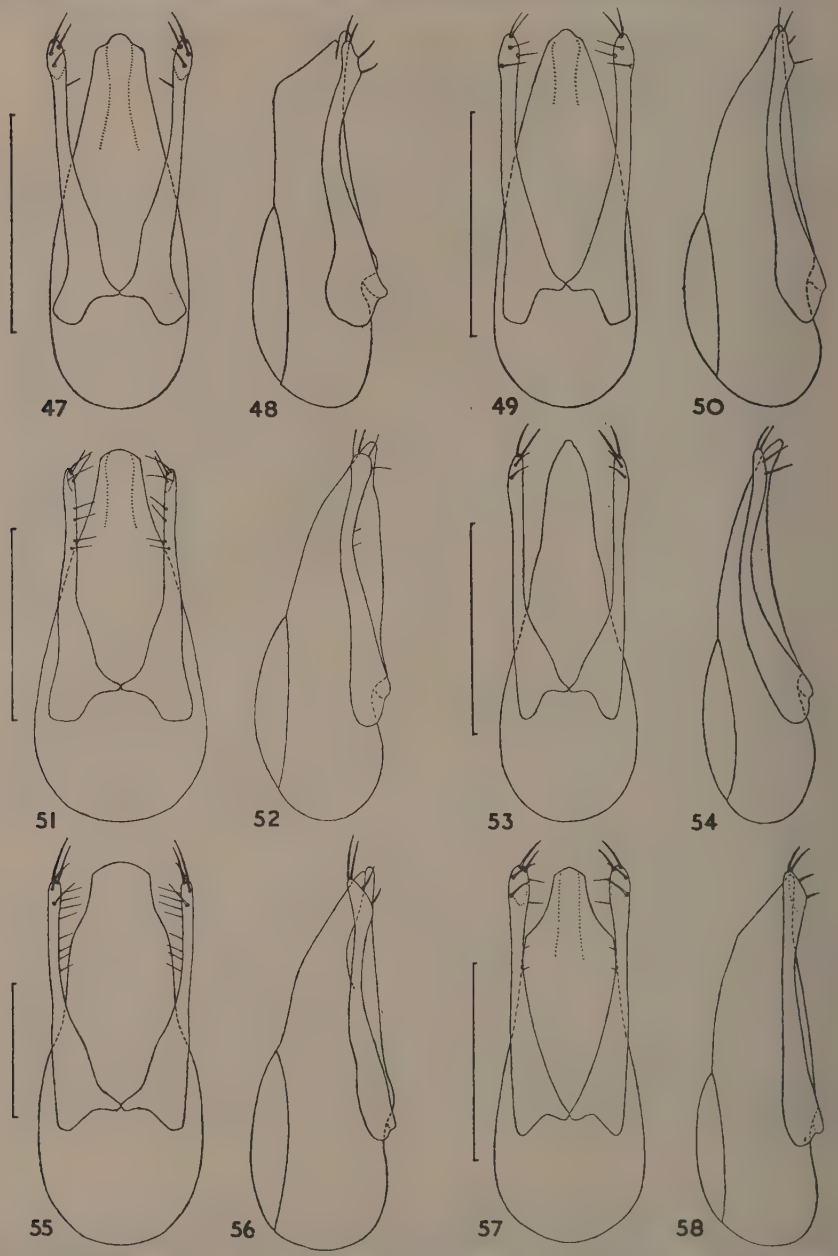
The specimens recorded by Bernhauer from Australia are *P. gayndahense* (Macleay) and those from the Seychelles *P. seychellensis* sp. n. No material from the Philippines determined as *singulare* has been seen but the record may well refer to *P. apicalis* (Cameron).

Paraphloeostiba seychellensis sp. n. (Figs. 61, 62, 97, 98)

Moderately convex. Head and pronotum dark reddish-brown, the latter lighter towards posterior angles, elytra and abdomen dark reddish-brown to dark brown; legs and first 5 antennal segments yellowish-brown, remainder of antennae darker. Length: 1·8–1·85 mm., without abdomen 1·15–1·2 mm. General shape of front parts as in *P. singulare* (Kraatz) (fig. 27);

pronotum about 1·63 times as broad as long and elytra about 1·59 times as long as pronotum.

Very similar to *P. singulare* (Kraatz), but rather lighter in colour and with ground sculpture a little stronger, the puncturation of *pronotum* stronger, coarser and a little closer and that of *abdomen* more distinct; *aedeagus* (figs. 61, 62) and accessory sclerite (fig. 97) very different.



FIGS. 47–58.—Ventral and lateral views of aedeagus of: (47, 48) *P. obesa*; (49, 50) *P. alutacea*; (51, 52) *P. impressa*; (53, 54) *P. solomonensis*; (55, 56) *P. cheesmani*; (57, 58) *P. hebridensis*. (Scale in each case = 1 mm.)

Seychelles : Silhouette, 1908, high forest over 1000 feet (*Percy Sladen Trust Expedition*).

Type (male) and two paratypes in the British Museum (Nat. Hist.), one paratype in my collection.

As stated above, this species was identified by Bernhauer as *P. singulare* (Kraatz). It was recorded by him under this name (1922, *Trans. Linn. Soc.* **18** : 167) and referred to by Scott (also as *singulare*) in his paper on the Coleoptera of the Seychelles.

Paraphloeostiba gayndahense (Macleay). (Figs. 28, 69, 70, 99, 100)

Omalium gayndahense Macleay, 1871, *Trans. ent. Soc. N.S.W.* **2** : 151.

Moderately convex. Pronotum and abdomen dark yellowish-brown to dark brown, head usually darker, elytra yellowish-brown to dark brown, with humeri lighter, sometimes the same colour as pronotum, sometimes lighter ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 1·85–2·1 mm., without abdomen 1·15–1·2 mm. General shape of front parts as figure 28. In the specimens examined, the pronotum varied from 1·55 to 1·61 times as broad as long and the sutural length of the elytra from 1·55 to 1·63 times the length of the pronotum.

Head moderately shining to rather dull, ground sculpture somewhat variable in strength but always distinct, punctures distinct, also somewhat variable in strength, very sparse in front, closer on posterior half, as large as or a little larger than meshes of ground sculpture ; penultimate segments of antennae about twice as broad as long. *Pronotum* as shining as head and with similar ground sculpture, impressed on each side on posterior half and sometimes with traces of median impressions ; in the middle with a rather narrow, impunctate, longitudinal space, on each side of this with rather weak and indistinct punctures which become coarser towards sides, on disc not very close and varying, in different examples, from smaller than to a little larger than meshes of ground sculpture. *Elytra* similar to pronotum in lustre and ground sculpture, punctures stronger and coarser than those on disc of pronotum, larger than meshes of ground sculpture and separated by two to three times their diameter ; epipleural keel well marked as seen from above. *Abdomen* rather shining, ground sculpture weaker than that on front parts, punctures indistinct. *Aedeagus* as figures 69, 70, accessory sclerite and spermatheca as figures 99, 100.

Australia : Queensland, Gayndah (type), Imbil, bred from hoop pine cones, 3.xi.36, Brisbane (*A. M. Lea*), Mt. Tambourine (*A. M. Lea*), Tolga (*Mjoberg*), Herberton (*Mjoberg*) ; New South Wales, Sydney, March 1935 (*R. E. Turner*), Acacia Plateau (*J. W. T. Armstrong*), Tweed River (*A. M. Lea*), Nowra, on *Datura arborea*, 26.xi.34 (*F. A. Rodway*). Lord Howe Island (*A. M. Lea*).

Scheerpeltz (1933, *Col. Cat.* **129** : 1050) lists this species as a synonym of *P. singulare* (Kraatz), presumably because Bernhauer recorded *singulare* from Australia (1920, *Ark. Zool.* **13** : 5).

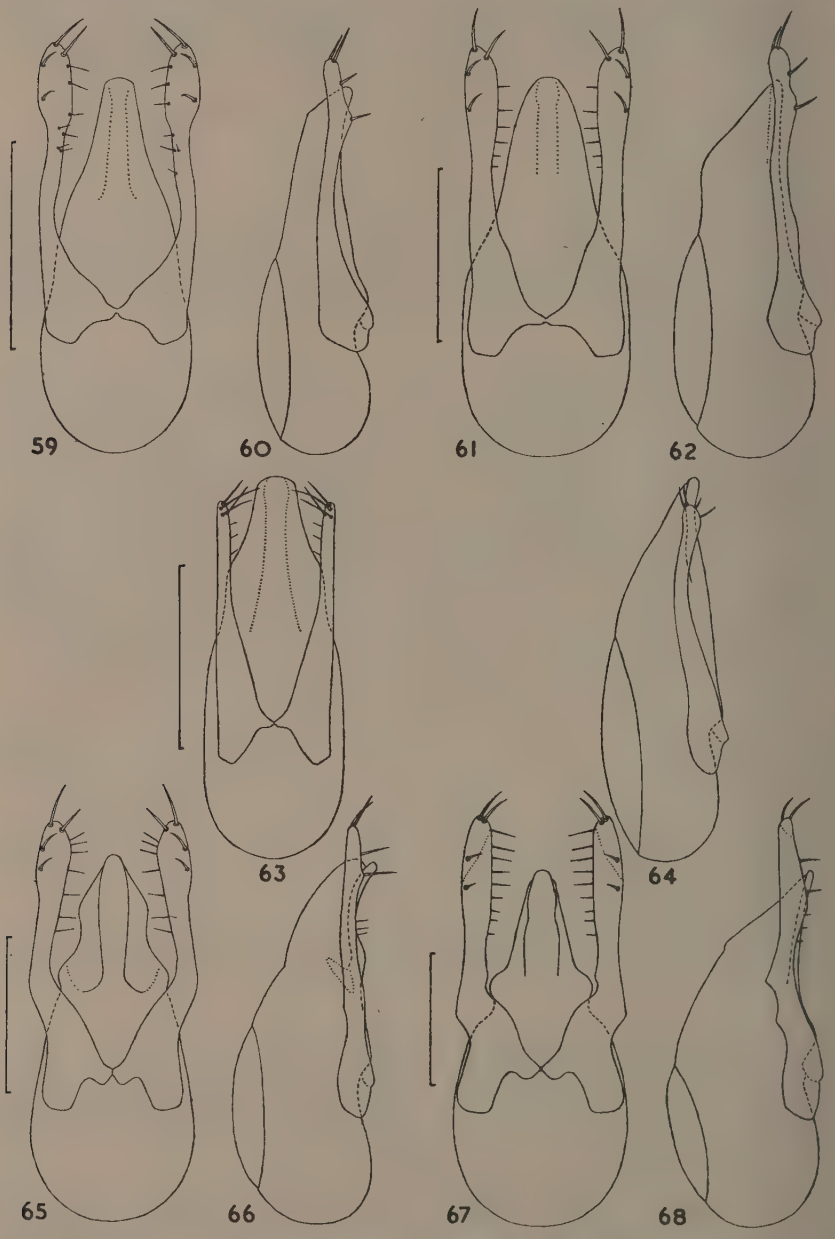
The two species are rather similar but *gayndahense* is more shining, with the pronotum rather less transverse and distinctly more finely punctured and the elytra relatively a little longer. The aedeagus and accessory sclerite are also different.

Paraphloeostiba norfolcensis sp. n. (Figs. 29, 71, 72, 101, 102)

Moderately convex. Body reddish-brown, head often darker brown ; legs and first 5 antennal segments yellowish-brown, remainder of antennae dark brown. Length : 1·7–2·5 mm., without abdomen 1·1–1·4 mm. General shape of front parts as figure 29. In the specimens examined, the pronotum varied from 1·61 to 1·65 times as broad as long and the sutural length of the elytra from 1·66 to 1·70 times the length of the pronotum.

Head rather dull with a strong ground sculpture, with scattered, indistinct, very weakly impressed punctures about as large as meshes of ground sculpture and sometimes so weak as to be virtually absent ; penultimate antennal segments about twice as broad as long. *Pronotum* rather dull with a strong ground sculpture as on head, distinctly impressed on each side on posterior half and with superficial median impressions or traces of these ; with moderately close punctures which, although not very fine, are so lightly impressed as to be barely visible and sometimes only

discernible at sides. *Elytra* distinctly more shining than pronotum and with ground sculpture much less strong, the punctures distinct, moderately strong, a little larger than meshes of ground sculpture and separated by rather more than twice their diameter, becoming weaker and less distinct posteriorly; epipleural keel well marked as seen from above. *Abdomen* more shining



FIGS. 59–68.—Ventral and lateral views of aedeagus of: (59, 60) *P. subopaca*; (61, 62) *P. seychellensis*; (63, 64) *P. singulare* (65, 66) *P. sumatrensis*; (67, 68) *P. fruhstorferi*. (Scale in each case = 1 mm.)

than elytra, ground sculpture weaker but distinct, punctures very fine and rather close but very indistinct. *Aedeagus* as figures, 71, 72, accessory sclerite and spermatheca as figures 101, 102.

Norfolk Island (*A. M. Lea*). Type (male) and 8 paratypes in the South Australian Museum, 3 paratypes in my collection.

This species was identified by Lea as "*Omalium gayndahense* Macleay". It is, however, quite distinct because of the strong ground sculpture and very weak pronotal punctures. The aedeagus and accessory sclerite are also characteristic.

Paraphloeostiba sumatrensis (Bernhauer). (Figs. 65, 66, 105, 106)

Phloeonomus sumatrensis Bernhauer, 1905, *Dtsch. ent. Z.* **1905** : 11.

Moderately convex. Body reddish-brown, head and pronotum sometimes lighter; legs and first to fifth antennal segments yellowish-brown, remainder of antennae darker. Length: 1·9–2·2 mm., without abdomen 1·15–1·4 mm. General shape of front parts as in *P. singulare* (Kraatz) (fig. 27). In the specimens examined, the pronotum varied from 1·67 to 1·69 times as broad as long and the sutural length of the elytra from 1·58 to 1·64 times the length of the pronotum.

Very similar to *P. singulare* (Kraatz) but lighter in colour; *pronotum* without traces of median impressions and more distinctly and rather more closely punctured and *elytra* a little more closely punctured. Almost identical with *P. seychellensis* sp. n. externally, punctures of pronotum a little closer. *Aedeagus* (figs. 65, 66) and accessory sclerite (fig. 105) characteristic and quite different from those of the above-mentioned two species.

Sumatra: Balighe, Oct., 1890–March, 1891 (*E. Modigliani*) (type); Fort de Kock, 1926 (*E. Jacobson*). Lombok: Sapit, 2000 feet, April, 1896 (*H. Fruhstorfer*). Type in the Chicago Natural History Museum.

Paraphloeostiba fruhstorferi sp. n. (Figs. 26, 67, 68)

Moderately convex. Head, pronotum, elytra, legs and first 5 segments of antennae yellowish-brown, sixth to eleventh antennal segments darker, abdomen dark brown with lighter apex. Length: 2 mm., without abdomen 1·3 mm. General shape of front parts as figure 26.

Head shining, ground sculpture absent on clypeus, distinct but not very strong elsewhere, with rather weak punctures distinctly larger than meshes of ground sculpture and becoming closer posteriorly, where they are separated by not much more than their diameter; penultimate segments of antennae about twice as broad as long. *Pronotum* shining, the ground sculpture distinct, moderately strong on disc and stronger towards sides and posterior angles, lightly impressed on each side on posterior half and with scarcely a trace of median impressions; punctures on disc distinct but not very strong, separated in places by less than twice their diameter, those at sides coarser and less distinct, more or less rugose, separated by about their diameter. *Elytra* less shining than pronotum, ground sculpture distinctly stronger, punctures about as large as those on disc of pronotum but somewhat stronger, separated by about twice their diameter; epipleural keel distinct as seen from above. *Abdomen* rather shining with ground sculpture much less strong than on elytra, the punctures indistinct. *Aedeagus* as figures 67, 68; female unknown.

Java: Tengger Mts., 2000 feet, 1890 (*H. Fruhstorfer*). Type, unique, in the British Museum (Nat. Hist.).

In the structure of the aedeagus this species is allied to *P. sumatrensis* (Bernhauer) but the two are otherwise quite different. *P. fruhstorferi* is lighter in colour with the pronotum less transverse, the elytra relatively shorter and the ground sculpture of the head and pronotum less strong.

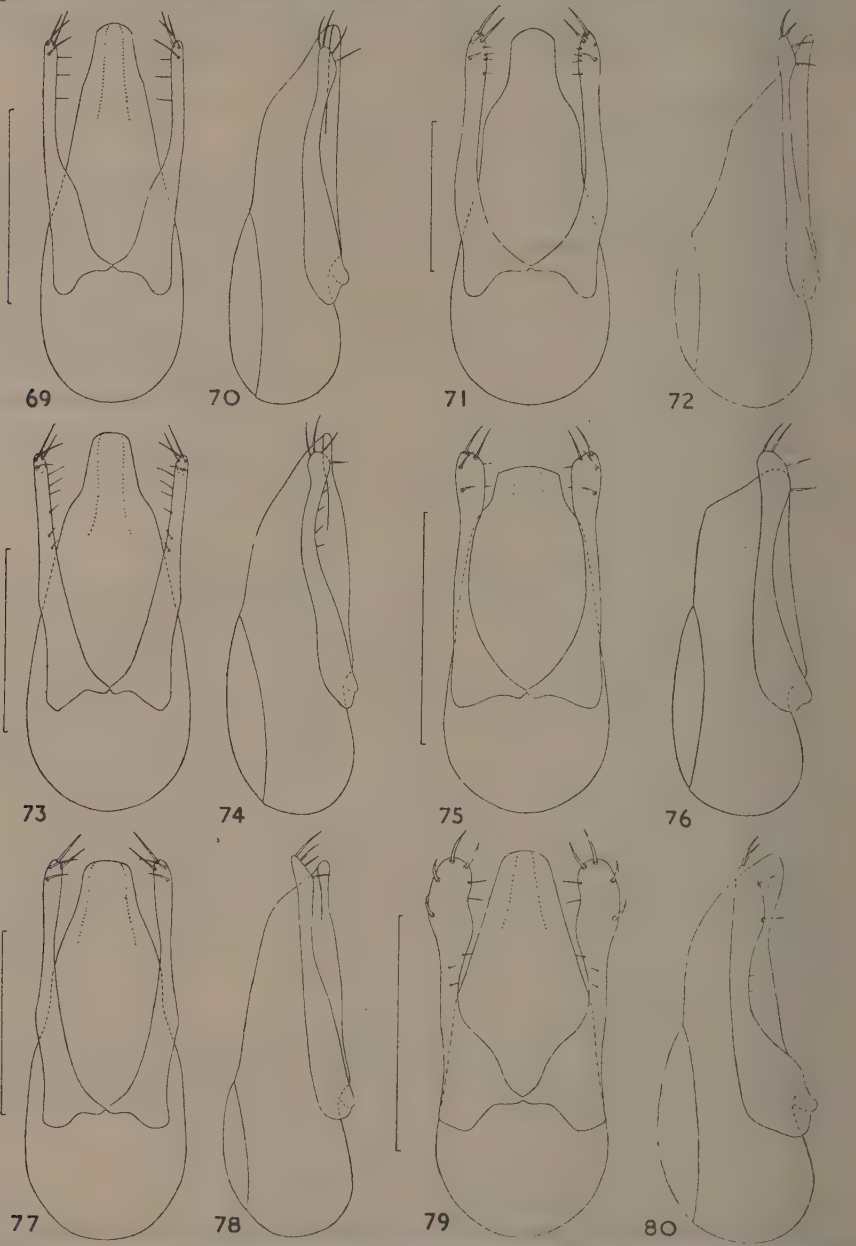
Paraphloeostiba apicalis (Cameron). (Figs. 30, 73, 74, 103, 104)

Phloeonomus apicalis Cameron, 1925, *Treubia* **6** : 175.

Moderately convex. Body lighter or darker reddish-brown, the head, and, at times, also the abdomen, sometimes darker, the elytra sometimes infuscate apically; legs and first 5 antennal segments lighter or darker yellowish-brown, remainder of antennae dark brown. Length: 1·75–2·4 mm., without abdomen 0·95–1·3 mm. General shape of front parts as figure 30. In

the specimens examined, the pronotum varied from 1·61 to 1·66 times as broad as long and the sutural length of the elytra from 1·54 to 1·63 times the length of the pronotum.

Head moderately shining, ground sculpture somewhat variable in strength and sometimes rather weak, but always distinct, the punctures distinct, slightly to distinctly larger than meshes of ground sculpture, very diffuse in front, closer on posterior half; penultimate antennal segments



FIGS. 69–80.—Ventral and lateral views of aedeagus of: (69, 70) *P. gayndahense*; (71, 72) *P. norfolcensis*; (73, 74) *P. apicalis*; (75, 76) *P. tonkinensis*; (77, 78) *P. marianicola*; (79, 80) *P. celebensis*. (Scale in each case = 1 mm.)

about twice as broad as long. *Pronotum* moderately shining, ground sculpture varying with that of the head, impressed on each side on posterior half and sometimes with traces of median impressions; punctures normally distinct though not very strong, but very weak and difficult to see in some examples; scarcely as large as meshes of ground sculpture on about anterior half of disc, becoming distinctly coarser towards sides and posteriorly, where they are slightly to distinctly larger than meshes of ground sculpture, generally separated, except at extreme sides, by at least twice their diameter, in places by much more. *Elytra* usually rather more shining than pronotum and with weaker ground sculpture; the punctures strong, larger than meshes of ground sculpture and separated by two to three times their diameter, sometimes becoming very weak posteriorly; epipleural keel well marked as seen from above. *Abdomen* distinctly more shining than elytra, with weaker ground sculpture, the punctures indistinct. *Aedeagus* as figures 73, 74, accessory sclerite and spermatheca as figures 103, 104.

Sumatra: Si Rambé, Dec., 1890–March, 1891 (*E. Modigliani*) (type); Ajer Mantcior, Aug., 1878 (*O. Beccari*); Fort de Kock, 1926 (*E. Jacobson*); Lampong, Wai Lima, Nov.–Dec., 1921 (*Karny*). Java: Pasuruan; Malang; Soekaboemi. Lombok: Sapit, 2000 feet, April, 1896 (*H. Fruhstorfer*). Philippine Is.: Luzon, Lamao.

Type in the British Museum (Nat. Hist.).

As is shown by the description, this species is rather variable in size, in the length of the elytra as compared with the pronotum and in the puncturation, particularly that of the pronotum. The aedeagus and accessory sclerite are, however, characteristic and do not allow confusion with any other species.

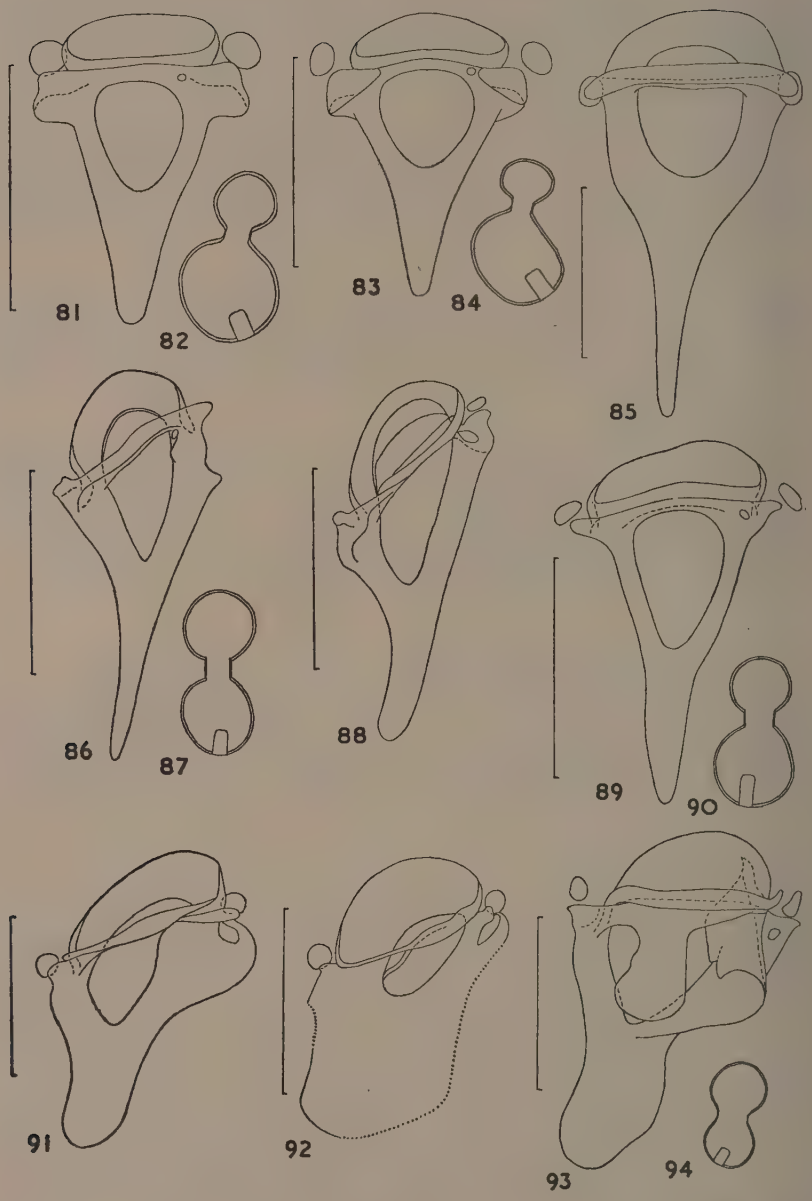
Dr. Cameron's series of the insect consisted of four species: *apicalis* (Cameron), *tonkinensis* (Cameron), *obesa* (Fauvel) and *fruhstorferi* sp. n.

Paraphloeostiba marianicola sp. n. (Figs. 1–6, 77, 78, 109, 110)

Moderately convex. Head, pronotum and abdomen yellowish-brown to dark brown, apex of abdomen sometimes lighter, elytra lighter or darker yellowish-brown, sometimes infuscate apically, particularly towards external angles; legs and first 5 antennal segments lighter or darker yellowish-brown, remainder of antennae darker. Length: 2–2·4 mm., without abdomen 1·05–1·25 mm. General shape as in figure 1. In the specimens examined, the pronotum varied from 1·49 to 1·60 times as broad as long and the sutural length of the elytra from 1·41 to 1·49 times the length of the pronotum.

Head not very shining, ground sculpture strong, sometimes weaker in front, with scattered rather weak and indistinct punctures about as large as meshes of ground sculpture and becoming closer posteriorly; antennae as figure 6, the penultimate segments about twice as broad as long. *Pronotum* not very shining, with similar ground sculpture to head, distinctly impressed on each side on posterior half and sometimes with very superficial median impressions or traces of these; varying from broadly impunctate on disc, or with punctures so weak as to be scarcely visible, and very weakly and indistinctly punctured at sides to distinctly, though not very strongly, punctured on each side of a narrow median impunctate space with punctures a little larger than meshes of ground sculpture and separated by about twice their diameter on the disc and rather stronger and sometimes coarser towards sides. *Elytra* a little more shining than head and pronotum, ground sculpture slightly less strong, punctures distinct and moderately strong, larger than meshes of ground sculpture and separated, on the average, by about twice their diameter, sometimes becoming weaker posteriorly; epipleural keel well marked as seen from above. *Abdomen* distinctly more shining than elytra, ground sculpture much weaker, the punctures very indistinct. *Aedeagus* as figures 77, 78, accessory sclerite and spermatheca as figures 109, 110.

Mariana Is. Saipan: Sadog Talofofo, 35 ex. including type, in decaying *Pandanus* fruit, Feb.–March, 1945, As Mahetog area, 7 ex. beaten from *Pandanus* fruit, 4.iii.45, 1 in decaying banana stalk, 5.iii.45, 6 by sifting debris in *Pandanus* clump, 22.iv.45, Papago area, 10 ex. in *Pandanus* blossoms, 7.v.45, 1 ex. under bark, 17.i.45, NE. coast, 1 ex., 12.ii.45, 1–2 miles E. of Tanapag, 1 ex., 4.iii.45, Mt. Tagpochau, 1250 feet, 1 ex., 15.ii.45 (*H. Dybas*); Matansa-Calabera, 7 ex., 8.v.40,



Figs 81–94.—" Accessory sclerite " and spermatheca of: (81, 82) *P. sulcicolle*; (83, 84) *P. assamensis*; (85) *P. secretus* (" accessory sclerite " only); (86, 87) *P. impressicollis*; (88) *P. opacicollis* (" accessory sclerite " only); (89, 90) *P. subopaca*; (91) *P. obesa* ("accessory sclerite " only); (92) *P. djawensis* (" accessory sclerite " only); (93, 94) *P. cheesmani*. (Scale in each case represents length of coxite of last abdominal segment, *i.e.* length *A* in fig. 5.)

Donnay-Sadog Tasi, 6 ex., 7.v.40, Fanaganan, 4 ex., 12.v.40 (*K. Yasumatsu and S. Yoshimura*). TINIAN: 1 ex., 17.iii.45 (*E. Hagen*); ridge, SE. section, 4 ex. in decaying *Pandanus* fruit, 11.iv.45, Mt. Lasso, NW. slope, 1 ex., 13.iv.45 (*H. Dybas*). GUAM: Dededo, 6 ex. in *Pandanus* fruit, 8.vi.35, 2 ex., 25.viii.37, Mata, 27 ex., 23.viii.37, Yona, 4 ex., 10.ix.37, 14 ex. 9.ii.38, Malolos, 1 ex. on banana stalk, 27.xii.37, Agat, 3 ex., 15.vi.38, Sinajana, 52 ex. on sunflowers, 7.ix.38 (*R. G. Oakley*); Upi Trail, 2 ex. from fig on ground, 5.v.36, Mt. Alifan, 7 ex. in *Pandanus* fruit, 27.vi.36, Asan, 1 ex. in rotten breadfruit, 22.viii.36 (*O. H. Swezey*); Mt. Santa Rosa, 2 ex., 16.v.45, Oca Point, 5 ex. in over-ripe *Pandanus* fruit, 9.vi.45, Agan, 1 ex., 12.vi.45 (*G. E. Bohart and J. L. Gressitt*); Oca Point, 11 ex. in straminate strobilus of *Cycas*, 1 ex. in dead *Cycas* stem, 28.v.45, Fadang, 1 ex. in decaying *Pandanus* fruit, 30.v.45 (*H. Dybas*); Mt. Alifan, 1 ex., April, 1946 (*N. L. H. Krauss*).

Holotype (male), allotype and several paratypes in the Chicago Natural History Museum. Paratypes in the U.S. National Museum, California Academy of Sciences, Bishop Museum, Kyushu University, British Museum (Nat. Hist.) and my own collection.

This species is similar to specimens of *P. apicalis* with comparatively short elytra, such as have been seen from the Philippine Is. It differs, however, in the less transverse pronotum and in the characteristic aedeagus and accessory sclerite, as well as in details of sculpture.

Up to the present, no specimens have been seen from outside the Mariana Islands.

Specimens from Guam were identified by Bernhauer as *P. hebridensis* (Bernhauer).

Paraphloeostiba tonkinensis (Cameron). (Figs. 31, 75, 76, 107, 108)

Phloeonomus* (*s. str.*) *tonkinensis Cameron, 1940, *Ent. mon. Mag.* **76**: 181.

Moderately convex. Body lighter or darker reddish-brown, the head and abdomen sometimes darker than the rest, except apex of elytra; elytra often infuscate posteriorly and sometimes also at sides; legs and first 5 antennal segments yellowish-brown, remainder of antennae darker. Length: 1·35–1·65 mm., without abdomen 0·85–1·1 mm. General shape of front parts as in figure 31. In the specimens examined, the pronotum varied from 1·59 to 1·65 times as broad as long and the sutural length of the elytra from 1·48 to 1·52 times the length of the pronotum.

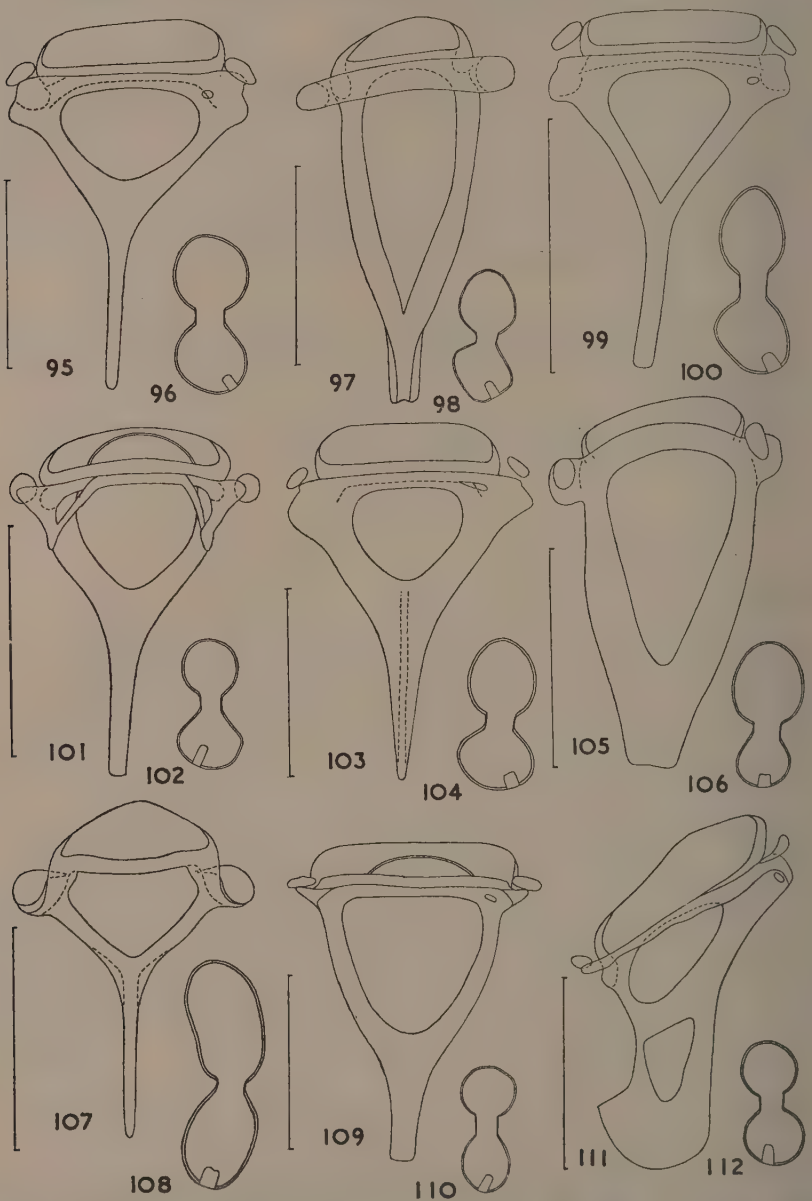
Head moderately shining, ground sculpture well marked, posterior half with a few very weak, sometimes scarcely visible punctures about as large as meshes of ground sculpture; penultimate antennal segments about twice as broad as long. *Pronotum* as shining as head and with similar ground sculpture, distinctly impressed at sides on posterior half and occasionally with traces of median impressions; the punctures weak or very weak, sometimes virtually absent, mostly a little larger than meshes of ground sculpture and separated, except at extreme sides, by at least twice their diameter and in places by much more, disc sometimes broadly impunctate. *Elytra* about as shining as head and pronotum and with similar ground sculpture, the punctures a little coarser than those on pronotum and distinctly stronger, separated by two to three times their diameter; epipleural keel well marked as seen from above. *Abdomen* more shining than elytra and with weaker ground sculpture, the punctures very indistinct. *Aedeagus* as figures 75, 76, accessory sclerite and spermatheca as figures 107, 108.

TONKIN: Hoa-Binh (type). SINGAPORE (*C. J. Saunders*). Type (♀) in the British Museum (Nat. Hist.).

P. tonkinensis is closely allied to both *marianicola* and *apicalis*, but is easily separated from both, not only by the characteristic aedeagus and accessory sclerite, but also by the spermatheca which is quite different from that of any other species examined. It also differs from *marianicola* in the, generally speaking, rather longer elytra and the weaker sculpture and from *apicalis* in the slightly shorter elytra. The puncturation of both this species and *apicalis* is very variable but, on the whole, that

of *tonkinensis* is weaker and more diffuse. The meshes of the ground sculpture, particularly of the pronotum and abdomen, vary in size in different specimens and are sometimes quite large.

The Singapore specimens were identified by Dr. Cameron as *apicalis*.



Figs. 95–112.—"Accessory sclerite" and spermatheca of: (95, 96) *P. singulare*; (97, 98) *P. seychellensis*; (99, 100) *P. gayndahense*; (101, 102) *P. norfolcensis*; (103, 104) *P. apicalis*; (105, 106) *P. sumatrensis*; (107, 108) *P. tonkinensis*; (109, 110) *P. marianicola*; (111, 112) *Ulommia antennata*. (Scale in each case represents length of coxite of last abdominal segment, *i.e.* length *A* in fig. 5.)

Paraphloeostiba celebensis sp. n. (Figs. 79, 80)

Homalium singulare var. *ustum* Fauvel *in litt.*

Moderately convex. Pronotum and elytra, except as noted below, light to medium yellowish-brown, head and remainder of abdomen darker, yellowish-brown to dark brown, elytra rather broadly infuscate posteriorly and sometimes also around suture ; legs and first 5 antennal segments yellowish-brown, remainder of antennae a little darker. Length : 1·7–1·8 mm., without abdomen 0·95–1·0 mm. General shape of front parts as in *P. tonkinensis* (Cameron) (fig. 31). In the specimens examined, the pronotum varied from 1·58 to 1·62 times as broad as long and the sutural length of the elytra was 1·50 times the length of the pronotum.

Except for the lighter colour, more or less identical externally with *P. tonkinensis*, the aedeagus, however, quite distinct ; female unknown. One of the specimens seen has the ground sculpture of the elytra coarser than in the other two.

Celebes : Kandari, March, 1874 (*O. Beccari*).

Type and one paratype in the Institut royal des Sciences naturelles de Belgique, one paratype in the Museo Civico di Storia naturale, Genoa.

III. **Ulommia** gen. n.

Head narrowed immediately behind eyes to a broad neck, ocelli distinct, below and behind each eye with a distinct border which appears from above as a small tooth at its posterior margin ; gular sutures separate, becoming very close at about level of middle of eyes, diverging in front and behind ; antennae with seventh to eleventh segments with close, short, fine setae in addition to the sparse, rather long setae present on all segments ; labrum lightly emarginate in front ; maxillae as figure 114, labium similar to that of *Paraphloeostiba* (fig. 4).

Pronotum transverse, side margins double as seen from side ; mesosternum not keeled, its process rather broad and rounded apically, extending between intermediate coxae for about half their length to meet the metasternal process ; elytra and wings normal.

Abdomen : tergite of fourth segment with a small, closely punctulate and pubescent area on each side of middle ; posterior margin of tergite of seventh segment with a narrow membranous fringe.

Legs relatively rather long and slender ; posterior coxae of normal Omaliine form ; tibiae finely setose externally ; tarsi, excluding claws, a little more than half as long as their respective tibiae, the first 4 segments very short, the fifth long, nearly three times as long as preceding 4 together ; vestiture of tarsal segments as in *Paraphloeostiba*.

Ground sculpture as in *Paraphloeostiba*.

Type species : *Ulommia antennata* sp. n.

Range : at present known only from Sumatra.

In the structure of the ligula, this resembles *Phloeostiba* Thomson and *Paraphloeostiba* Steel ; it differs from both, however, in the general facies, the structure of the maxillae and maxillary palpi, the broader mesosternal process and in the relatively long and slender legs with the last tarsal segment longer. The gular sutures are also more approximate in the middle.

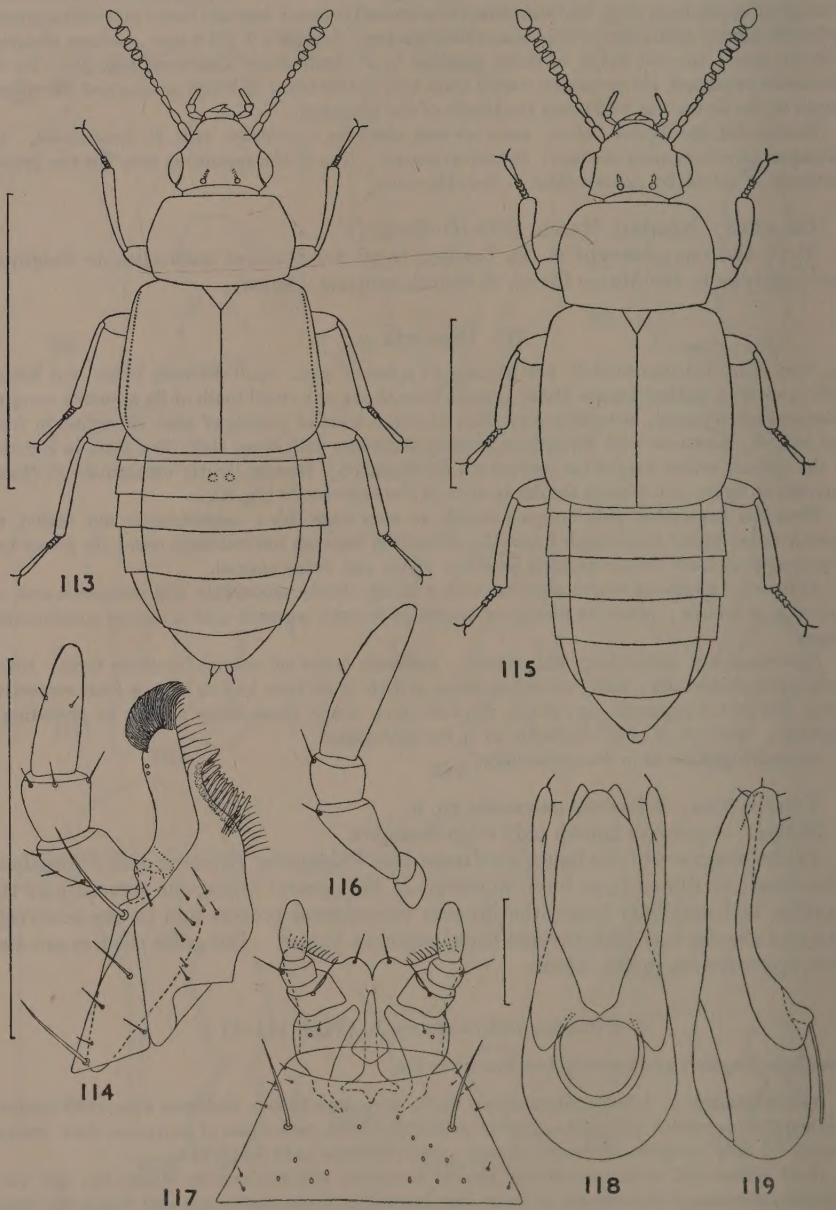
Ulommia antennata sp. n. (Figs. 111–4)

Homalium singulare var ? *antennatum* Fauvel *in litt.*

Rather depressed ; head, pronotum and elytra very dark brown, abdomen somewhat lighter ; legs and first to eighth antennal segments yellowish-brown, remainder of antennae dark brown. Length : 2 mm., without abdomen 1·2 mm. General shape as in figure 113.

Head rather dull with very strong ground sculpture and moderately strong but not very distinct punctures, rather sparse in front and becoming closer posteriorly and distinctly larger than meshes of ground sculpture ; antennae with third segment narrower than and about as long as second, fourth shorter than third, fifth to tenth about as long as fourth but becoming gradually wider, the fifth longer than broad, sixth and seventh subquadrate, tenth less than twice as broad as long, eleventh longer than tenth, bluntly pointed apically. *Pronotum* moderately

shining, ground sculpture distinctly less strong than on head, lightly impressed on each side on posterior half and with traces of median impressions ; in the middle with a rather narrow, impunctate longitudinal space, elsewhere with distinct, moderately strong punctures larger than meshes of ground sculpture and becoming coarser towards sides, separated by once to twice their diameter. *Elytra* rather more shining than pronotum and with weaker, but still distinct,



Figs. 113–4.—*Ulommia antennata* : (113) adult (scale = 1 mm.) ; (114) maxilla (scale = 0·2 mm.).
Figs. 115–9.—*Metaxylostiba castaneipennis* : (115) adult (scale = 1 mm.) ; (116) maxillary palpus (scale as 117) ; (117) labium (scale = 0·2 mm.) ; (118, 119) ventral and lateral views of aedeagus (scale = 0·2 mm.).

ground sculpture, the punctures somewhat coarser than those on disc of pronotum and separated, on the average, by about twice their diameter; epipleural keel rather broad as seen from above. *Abdomen* shining, ground sculpture weaker than on elytra, very finely and moderately closely punctured, the punctures not very distinct. *Accessory sclerite* and spermatheca as in figures 111, 112; male unknown.

SUMATRA: Deli region, in tobacco. Type, unique, in the Institut royal des Sciences naturelles de Belgique.

IV. **Metaxylostiba** gen. n.

Head narrowed behind eyes to a broad neck, ocelli distinct; below and behind each eye with a distinct border which is some distance from the eye in the type species (fig. 115); gular sutures separate, not becoming very close, closest at about level of middle of the eye, diverging in front and behind; sixth to eleventh antennal segments with close, short fine setae in addition to the normal sparse, rather long setae; labrum lightly rounded in front, not examined microscopically; mandibles short and stout, at least the right edentate internally (left broken); maxillae similar to those of *Paraphloeostiba* (fig. 4); maxillary palpus as figure 116, labium as figure 117.

Pronotum transverse, lateral margins double as seen from side, the two margins very close together; mesosternum with a very short keel basally, its process bluntly pointed and extending between intermediate coxae for about half their length to meet that of metasternum; elytra and wings normal.

Abdomen: tergite of fourth segment with a small, closely punctulate and pubescent area on each side of middle; posterior margin of tergite of seventh segment with a narrow membranous fringe.

Legs: posterior coxae of normal Omaliine form, the tibiae widened apically; anterior tibiae with a few short, stout, spine-like setae externally on about apical third, the intermediate with longer, less stout setae externally on about apical half, the posterior very finely setose externally on about apical two-thirds; tarsi, excluding claws about five-eighths as long as their respective tibiae, the first 4 segments short, fifth about one and one-third times as long as preceding 4 together; vestiture of tarsi similar to that of *Paraphloeostiba* but with rather more setae on the intermediate and posterior.

Type species: *Phloeonomus castaneipennis* Cameron.

Range: at present known only from Sarawak.

Metaxylostiba resembles *Xylostiba* Thomson in the form of the ligula, but has double margins to the pronotum and very different maxillary palpi. It cannot be confused with any described genus.

Metaxylostiba castaneipennis (Cameron). (Figs. 115–9)

Phloeonomus castaneipennis Cameron, 1928, *Sarawak Mus. J.* 3: 433.[4]

Rather convex. Body very dark brown; legs and second to fifth antennal segments reddish-brown, remainder of antennae dark brown. Length: 3·6 mm., without abdomen 2·34 mm. General shape as in figure 115.

Head moderately shining, impunctate in front, elsewhere with close, rather fine and moderately close punctures separated by at most their diameter; ground sculpture on impunctate area consisting of fine, close, transverse lines, on punctate area in the form of numerous fine lines joining the punctures; antennae with third segment narrower basally and distinctly longer than second, fourth much shorter than third, longer than broad, fifth about as long as fourth, subquadrate, sixth not much longer than fifth but distinctly broader, lightly transverse, seventh to tenth about as long as sixth but gradually becoming broader, tenth about twice as broad as long; sixth to eleventh segments forming a more or less well differentiated club. *Pronotum* shining, strongly and very closely punctured, punctures a little coarser than those on head and separated by at most their diameter; ground sculpture similar in form to that on punctured part of head, very weak and indistinct except at sides; strongly but not very broadly impressed at sides on

[4] In the original description the genus is misspelled "*Pholœonous*", the type specimen is, however, labelled *Phloeonomus*.

rather more than posterior half and with traces of median impressions. *Elytra* shining, as strongly and as closely but slightly more coarsely punctured than pronotum and without ground sculpture; epipleural keel distinct as seen from above. *Abdomen* rather less shining than elytra, distinctly and moderately closely punctured, the punctures considerably finer than those on elytra and separated by three or four times their diameter; ground sculpture fine and distinct, consisting of numerous fine lines joining the punctures, these branch in places to form a polygonal network. *Aedeagus* as in figures 118, 119; no female available for examination.

SARAWAK: Mt. Murud, 5000–6000 feet. Type in the British Museum (Nat. Hist.).

V. SUMMARY

A new genus, *Paraphloeostiba*, is erected for 20 species from Asia and Australasia, previously placed in *Phloeonomus* Thomson, and for nine new species. A key is given for species separation, and is followed by descriptions of all the species.

Two further new genera, *Ulommia* and *Metaxylostiba*, are erected for two other Asian species, also previously considered as species of *Phloeonomus*.

A hitherto undescribed structure associated with the ovipositor is shown to be of great value in the separation of species. Figures are given of this structure and also of the aedeagi and other features useful for identification.